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Railway Age

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Railway Age

Vol. 89, No. 11 September 13, 1930

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Commission Hearings on "Reciprocal Buying"

THE Interstate Commerce Commission on September 30 will begin in Chicago a series of hearings on "reciprocal buying." Its field agents have been gathering information since an investigation was ordered more than a year ago. That the practice of railways in using their purchases to influence the routing of traffic, and of shippers in using their traffic to influence railway purchases, is widespread is not questioned by anybody, and it has both critics and defenders. There can be no reasonable objection to the facts regarding its extent, nature and effect being ascertained and made public by the Interstate Commerce Commission. If the facts will bear publicity, nothing more need be said or done. If they will not bear publicity, their disclosure will demonstrate the need for a change in the relations between the railways and many shippers.

The Federal Trade Commission already has held hearings on two complaints made by itself charging the Mechanical Manufacturing Company and officers of Swift & Company, and also the Waugh Equipment Company and officers of Armour & Company, with unfair competition. No decision has been announced in either case. The testimony in the Mechanical Manufacturing Company case showed clearly that this company was controlled by officers of Swift & Company, and that they used Swift's traffic to influence railways to purchase supplies from the Mechanical Manufacturing Company. After these facts were established the Mechanical Manufacturing Company retired from the draft gear business and control of it later was disposed of by officers of Swift & Company.

The hearings in the Waugh Equipment Company case have not been finished. Testimony already introduced has shown, however, that control of it is, or recently was, owned by officers and former officers of Armour & Company and their relatives; that a large part of their stock was given to them; that many railway officers knew of the interest of officers of Armour & Company in the Waugh Equipment Company, and that, in fact, in some instances officers of Armour & Company orally or in writing solicited business for the Waugh Equipment Company. Whatever the decision of the Federal Trade Commission may be, railway officers and railway supply manufacturers know exactly what these facts signify. If and when the Federal Trade Commission or Interstate Commerce Commission looks a little farther it will find that the Waugh Equipment Company is not the only company in which officers of Armour & Company are interested, that is, using Armour's traffic to influence railway purchases.

What Is "Good Business?"

Some of the questions raised by "reciprocal buying" seem to be questions of ethics. The *Railway Age* does not concern itself with questions of morals, but only with questions of business. Perhaps it is "good business" for big industrial and commercial companies and their officers to use their traffic to cause the railways to make purchases from concerns from which they might not otherwise make them. The railways, fortunately or unfortunately, are not in the same position as big industrial and commercial concerns. They render what is regarded as a public service, and consequently are subject to a peculiar form of regulation. Therefore, there are many things that it may be "good business" for other companies and their officers to do which it is not good business, or even lawful, for railways and their officers to do. The railways are assured by law of the opportunity to earn a fair return only upon condition that they shall be honestly, efficiently and economically managed. Therefore, any practice that interferes with the most efficient and economical operation that is practicable is not good business for the railways, because it tends to increase their expenses and to undermine their important and fundamental right to the opportunity to earn a fair return.

"Racketeering" and the Railways

Is the practice of "reciprocal buying" so extensive, and are its effects such, that it interferes or tends to interfere with the efficient and economical conduct of the railroad industry? The hearings before the Interstate Commerce Commission probably will help to clear up the whole situation. Big shippers always have exerted more influence on the railroads than has been good for the railroads. Many big shippers seem to regard the railroads as their natural prey, and to feel that any business practice is sound which enables them to extort special advantages and concessions from the railways. The hearings on reciprocal buying will have one beneficial effect at any rate, if they result in the disclosure of many of the practices that numerous big shippers use to secure unfair advantages from the railways, and use so persistently

because they have no fear of the railroads and know that the railroads are afraid of them.

The railways are subjected to a great deal of what is called "racketeering," when it is practiced by persons who have not a high standing in the community. The Interstate Commerce Commission would render a great service to the railways and the public if it would expose and destroy all the different kinds of "rackets" to which the railways are subject.

The Reduction of Maintenance

WHEN an industry is forced to operate even in years of general prosperity upon such a narrow margin of profit as the railroad industry is, it must in years of depression adopt very radical measures if it is to report sufficient net earnings even partially to maintain its credit. The measures to which many railways are now resorting in an effort to prevent their net operating income from declining relatively lower than it did in the early part of this year is indicated by the fact that the total expenditures made by the Class I roads for the maintenance of their properties in June were the smallest made by them in any June since 1917, when wages and all other costs were much lower than they are now. Expenditures for maintenance of way in June were less than $67,000,000, or about $13,000,000 less than in June, 1929, and the smallest since 1919. Expenditures for maintenance of equipment in June were only about $85,000,000, or about $15,000,000 less than in June, 1929, and the smallest since 1917.

About 90 per cent of total operating expenses are incurred for "transportation," "maintenance of equipment," and "maintenance of way and structures." A reduction of transportation expenses is a real saving. A reduction of either of the two kinds of maintenance expenses may be a real saving; but if it is very large it practically always is mainly the result of deferring work that needs to be done, and results in temporary deterioration of the properties. In the first two months of this year the reduction of total maintenance expenses was only 5 per cent. As the decline of traffic and earnings has become relatively greater month by month, the reduction of expenditures for maintenance has correspondingly increased. In June the reduction of maintenance of way expenses was 16.2 per cent, and the reduction of maintenance of equipment expenses was 15.3 per cent. The reduction of transportation expenses was $18,300,000, and the reduction of total maintenance expenses was $28,300,000. In the first six months of the year the reduction of transportation expenses was $81,527,000, or 7.8 per cent, and the reduction of total maintenance expenses was over $96,000,000, or 9.4 per cent. The reductions of maintenance expenses reported for July and August undoubtedly will be relatively greater than those reported for June.

This policy of deferring maintenance under such conditions as have existed this year often is criticized, but as a practical matter is unavoidable, and always has been and probably always will be adopted as long as the railways are forced, even in years of general prosperity, to operate as they have been for years on a margin of profit that is much smaller than the "fair return" to which they are legally entitled. It is, however, a policy that is fraught with danger, as inadequate maintenance not only increases the expenses that must be incurred when traffic increases, but also tends to cause deterioration of service in every respect.

Fortunately, there are indications that the decline of freight business has passed its maximum. The decline in car loadings in the week ended August 30 of about 15 per cent was relatively the smallest that has been reported since the week ended July 19. The *Railway Age* always has believed that traffic would improve in the last third of this year, not only as compared with the last third of last year, but as compared with previous years. The car loadings of a single week are not sufficient to base a forecast upon; but as the slight upward trend indicated by loading in the week ended August 30 is a trend that, in view of past experience, might now be normally expected, it seems probable that the same favorable trend will continue to be shown from now on.

Switch Construction for Centralized Control Layouts

IN centralized-traffic-control installations, the switch layouts that are equipped for power operation by electric machines should be well constructed to hold the rails to proper gage and to prevent running of the rails. The conditions in these respects are perhaps more exacting for a remotely located switch than at a switch in a large interlocking, because when a remote switch will not lock up properly, owing to the fact that the rail is not in the correct position, several trains might be delayed before the maintainer could be notified and have time to arrive at the scene, whereas the maintainer is ordinarily on hand at a large plant.

Several roads have given these matters special consideration. On the Denver & Rio Grande Western, for example, the switches in the power-operated as well as the spring-switch layouts of the centralized control territory, which embody No. 18 turnouts constructed of new 110-lb. rail, are provided with adjustable rail braces and 1-in. by 8-in. insulated gage plates on 4 ties, and rail braces on the next 12 ties. Such construction holds the rail to proper gage. The Chicago, Burlington & Quincy has taken particular pains to minimize rail creeping in its centralized control installations and ordinarily applies about 300 rail anchors in each layout. In addition, as a means of holding the switch points in proper position, two special anchors constructed of heavy strap iron are attached to the rail joints at the heels of the switch points and extend over and are lagged to 10 ties. In addition to these special measures, a high standard of construction and maintenance with respect to the entire track structure at switches is essential for the effective operation of centralized-traffic-control installations.

Improving Bond Prices

THE *Railway Age* index of the average price of twenty representative railway bonds on September 9 stood at 95.71, marking a consistent increase which has been maintained week by week for almost three months. The index now stands 6.56 points above the low point reached in October of last year, when the stock market boom was at its height.

This tendency is encouraging from two different aspects. In the first place, obviously, it enables the railways to meet their financial requirements at a reduced cost. Secondly, and perhaps even more importantly, it may well be the forerunner of a revival of normal business activity. With money plentiful and yielding very low rates of interest in the call money market, the interest in speculative stocks being at low ebb, investors find the yield on high-grade bonds increasingly attractive. More and more funds, heretofore used to support speculation, find a more profitable field in safe, fixed-income obligations.

Improvement in the bond market is thus a development which, in the ordinary course of events, should precede a revival in both stock and commodity markets. That this improvement in bond prices, especially of railroad issues, is actually taking place is a welcome development, however natural and expected. Following it, a revival in stock and commodity prices and a resumption of normal economic activity, may be looked for. Without it observers of business conditions would probably be inclined toward continued uncertainty as to the immediate economic future.

Courts and the Railways

SOME months ago a Chicago judge fined the terminal trainmaster of the Baltimore & Ohio Chicago Terminal $25 and sentenced him to 60 days in the county jail for alleged contempt to court. What with gangsters and other things to take care of, the judge was apparently too busy to pay much attention to the case, beyond sentencing the trainmaster to jail. The theory seems to have been that, since he was a railway officer, he should be put in jail, as the railways are such natural and inevitable targets for regulation and correction from all sides.

As stated elsewhere in this issue, the case was appealed, and the reviewing judge, who listened carefully to all the evidence, reversed the decision of the lower court, stating that it was "against the manifest weight of the evidence."

The case concerned a switchman called for jury service who did not lay off while serving, but bid in a night job instead, and then began leaving his work from one to two hours before the expiration of his tour of duty. He was warned about this, and was requested to make other arrangements which would not interfere with his work. He did nothing about it and persisted in leaving the job before quitting time, and, after a hearing, he was discharged. Thereupon he complained to the state's attorney and the criminal prosecution took place.

The case is settled, but it was a costly one for the B. & O. C. T. The fact that the complainant "did not have a leg to stand on" was clearly brought out before the reviewing court, and yet the railway and its officers were the sufferers. The newspapers gave a great deal of publicity to the fine and the jail sentence, not only in Chicago, but elsewhere. As yet, however, no mention has been made in the newspapers of the decision of the reviewing court, and it is unlikely that any mention will be made. Thus, the first and erroneous impression that the B. & O. C. T. was attempting to obstruct justice will remain in the minds of many people. In addition, the B. & O. C. T. was compelled to incur large legal expenses and to pay for the time of officers and employees summoned as witnesses at both trials.

But for its serious consequences, the case was so flimsy as to be laughable. It shows the annoyances the railways must endure in their efforts to serve the public.

Does Beautifying of Station Grounds Pay?

SO many roads still question the value of beautifying their station grounds, that, in spite of the efforts of many roads, the general impression prevails among a large part of the public that most railroad stations and station grounds are unsightly and evidence of willful neglect on the part of the railways. This is unfortunate, because for a number of years the railways as a whole have been trying to create a favorable attitude on the part of the public and to stand out in their true light as benefactors of every community. Many lines of effort have been employed in this regard, and a remarkable improvement has resulted in the attitude of the public toward the railways. It is doubtful, however, if many of the roads have as yet taken advantage to the fullest extent of the favorable impression which can be created and maintained by attractive and well-kept station grounds. In view of this situation, an article was published in the *Railway Age* of August 9, which outlined the practices of the Delaware, Lackawanna & Western in serving the suburban territory near New York City. This road is an outstanding exponent of attractive station grounds, and is capitalizing on them.

The primary object of the policy of the Lackawanna is to create a favorable impression on its patrons and the public in general, which will redound to it in good will. That this is being accomplished is evidenced by the widespread reputation which it has gained for its highly attractive station grounds and as a benefactor of the communities which it serves. Both the road and the communities are advertised as catering to home owners and to a generally high class of people. That this has been effective is evidenced by the character of the communities along its lines, and the constant growth which these communities, and incidentally, the road's commuter business, have enjoyed. The Lackawanna believes that beautified station grounds do pay in good will and monetary return, especially where a road caters to passenger traffic and serves residential communities.

Minor Train Accidents

THE Safety Section of the American Railway Association, having recorded seven successive annual achievements of a notable character in saving employees' lives and limbs, is turning its attention to the need of better results in another field of safety effort—train accidents; and the committee on statistics starts off with a tentative goal of five per cent reduction yearly for three years; a modest figure surely, if only the real causes can be attacked in concert. And, of course, reduction in train accidents helps in the reduction of deaths and injuries.

The committee, in its appeal, takes in the whole problem, calling attention to the fact that accidents costing less than $150 each, and therefore not reportable to the government, constitute a vast field that needs attention. On some roads it seems hardly to have been touched by the safety departments. It is estimated that more than seventy per cent of train accidents cost less than $150 each, and so are never made public. When we contemplate the total of nineteen million dollars as the annual damage to cars, engines and roadway, as reported in the government train-accident record, we have only begun to get at the full cost of this class of carelessness. Damage bills paid on thousands of freight claims, and the thousands of payments on account of bodily injuries probably cover another nineteen million dollars, and the minor accidents, doing no bodily harm, add further untold millions.

The safety superintendent exercises two important functions which do not show up very prominently in the proceedings of the conventions, but which exert a constant influence for good; first, his pervasive activities all over the road, which stir to action the superintendents and all of their staffs, whether he does or does not make any appeal to them directly; and, second, his similar influence, perhaps largely unconscious, on the safety departments of other roads. T. H. Carrow, chairman of the committee on statistics, frequently emphasizes the point, that, because of the constant country-wide interchange of freight cars—which may have been weakened by concealed injuries and be loaded with merchandise already damaged by rough handling in switching—every road is interested in the safety of train movement on every other road.

Statistical studies may seem a barren field in which to do constructive work, but they are unexcelled as a starting point. This committee constantly reiterates that where one road (or division) shows an accident percentage two, five or ten times greater than that of another road (or division) there is surely something that needs to be explained. And the percentages in tables recently published, as for example those in the *Railway Age* of May 31 last, page 1322, show that this need is still an outstanding everyday fact.

While the country-wide unexplored field of non-reportable accidents is made the main point in the appeal of this committee, facts are given to show that accidents in the reportable class also need further attention. Under the head of "other locomotive accidents"—not classed as either train accident or boiler accident—it is found that apparently only two leading roads report these cases faithfully. The implication is that large numbers of accidents costing from $150 up to $1000—and frequently above $1000—are by most roads not reported. Samples of these items read:

Side rod breaking	$329.45
Back end left main rod brass burned out	$483.17
Pony truck journal broke ($114.35 to clear wreck)	$189.35
Axle breaking	$338.06

Miscellaneous train accidents which escape attention in the records are quoted at great length. For example:

Body of wooden car buckled because unable to withstand ordinary handling	$570.85
Car buckled, damaged five other cars	$1,727.00
Automobile truck struck by train	$1,279.36
Lading struck signal bridge, due to sill of car spreading	$1,040.00
Train parted, due to coupler yoke rivets breaking	$157.70

Doing Track Work Well

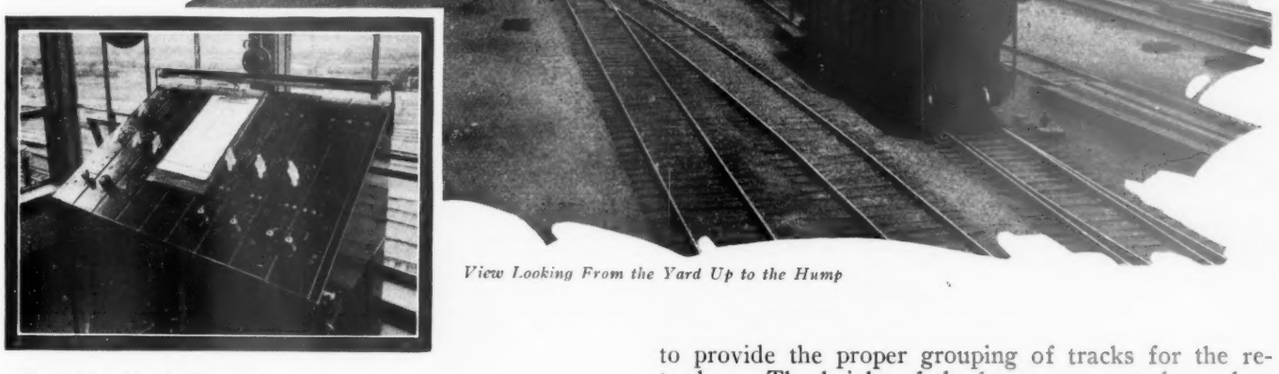
AS a class, supervisory officers of the maintenance of way department are conservative. They view with no little concern any proposals for changes of organization which, in their opinion, will break up established relationships, because under such relationships there have grown up precedents for allotments of material and labor upon which they have been able to place considerable reliance. Moreover, being men who feel keenly the responsibilities imposed on them, they question any deviation from established relationships that might be presumed to jeopardize their authority.

This attitude has been in evidence upon every occasion of the discussion of such subjects as the conduct of ballasting and rail renewals under the jurisdiction of the district or grand division rather than the division or subdivision. Particular objection is offered to the handling of such major operations under this plan because the local supervisor has no control over the quality of the work done, in spite of the fact that he is necessarily held responsible for the condition of the track after the extra gang has completed its work.

There is merit in this criticism because the extra gang foreman or supervisor is held accountable primarily for the progress and, therefore, the cost of his work. Consequently, in so far as he is concerned, quality is of secondary importance, particularly because workmanship in such operations as rail laying and surfacing is a matter that is not readily defined in exact terms. Quality of the work performed is nevertheless a highly important element, not only in so far as it concerns the plan or organization under which it is carried out, but also by reason of the influence it has on the cost of subsequent maintenance work. Quality of workmanship in rail laying, for example, has an important bearing on the service life of the rail. Specifications defining elements of good workmanship in such operations and means by which such specifications can be enforced are worthy of closer attention.

Car Retarders Reduce Cost of Yard Operation on the C. & O.

Cost per car reduced 25 cents on an average of 2,750 cars per day totaling $200,000 annually or 40 per cent on investment



View Looking From the Yard Up to the Hump

Control Machine in Tower I

ON November 26, 1929, the Chesapeake & Ohio placed in service an installation of car retarders and power switches in one of its westbound classification yards at Russell, Ky., which affords an excellent opportunity to make a direct comparison with the previous operation, as this yard was formerly operated with car riders and equipped with power-operated switch machines controlled from a push-button machine.

A unique feature of the operation of this yard is that it is used exclusively for the classification of westbound loaded coal cars. Merchandise, manufactured products and other traffic are classified in a smaller yard, which also handles the overflow from the retarder-equipped yard. The coal traffic originates at mines on the various lines of the C. & O. in West Virginia and eastern Kentucky and is destined for the lake ports and central western cities.

Yard Layout

The receiving yard includes 17 tracks, 8 of which will hold 115 cars each and the others, 88 cars. The classification yard includes 21 tracks with a total capacity of 1,995 cars, each track holding 95 cars. The yard was built in 1918, at which time it was equipped with power switch machines controlled from a push-button machine in a tower, located near the main switch leads; this building is now being used as Tower 1.

When installing the car retarders, no extensive changes were made in the track arrangement or the location of switches, only a few switches being moved to provide the proper grouping of tracks for the retarders. The height of the hump was not changed as this was fixed by the location of the track scales. As a result the grades were not altered except to bring the classification tracks to a grade of 0.23 per cent, which gives practically no acceleration to loaded coal cars at the normal temperatures in this locality. During cold weather, hot oil is applied in the journal boxes as the cars approach the hump.

Retarder Equipment

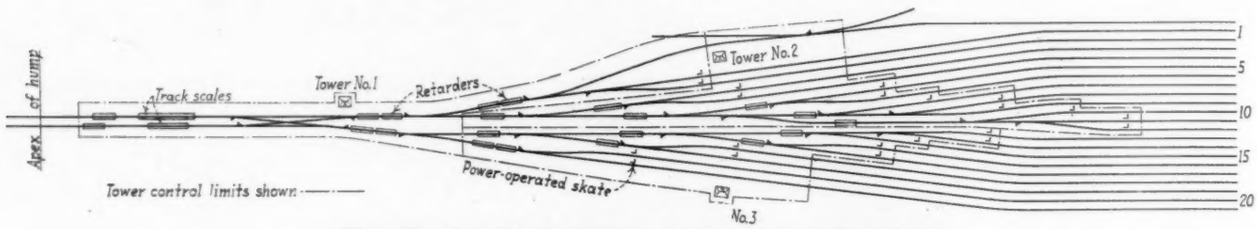
A total of 21 double-rail retarders with a total length of 1,324 rail-feet, 21 power skates and 25 power switches, all controlled from machines in three separate towers, constitute the operating equipment, which is of the latest electro-pneumatic type manufactured and installed by the Union Switch & Signal Company. The Machine in Tower I, which is located just below the hump, controls adjacent retarders and the switches leading from the hump to the different sections of the yard; Tower II at the north side and Tower III at the south, control the operations in their respective sections of the yard, the territory handled by each tower being indicated on the track diagram.

A three-indication color-light signal near the crest of the hump, and a repeater signal about 3,000 ft. further down in the receiving yard, direct the engineman of the hump engine. A similar signal in the throat of the yard and facing toward the classification tracks, is used to direct trimmer movements. The signals are controlled by levers in the hump conductor's office.

A counter located in the superintendent's office approximately one mile away, is operated for every car that passes over the scales. This counter is controlled

by contacts in a circuit controller actuated by a bar which is depressed by the wheels of each car.

Each tower, as well as the office of the hump yardmaster, is equipped with a loud speaker so that direct communication may be held between various points without the necessity of having to use head receivers. At the base of Towers II and III, a telephone equipped with a special loud speaker is provided which is of benefit to the car repairmen and others in communication with the yardmaster and retarder operators.



Plan Showing Track Layout and Location of Retarders

The general illumination of the hump and the classification yard is supplied by a floodlighting system employing large projectors on 90-ft. steel towers. However, the unique feature of the yard lighting installation is the provision of projectors on the retarder control towers to furnish added illumination in the vicinity of the retarders. These special projectors are so directed that the operators can see the car numbers more distinctly and also judge the speed of each car more accurately when approaching and passing through the retarders.

Operation of the Yard

In order to simplify and concentrate the weighing and billing, the cars are moved from the various mines to Russell on the authority of a "mine card," which gives the car initial and number, the point of loading, the name of the shipper and consignee and the destination. The conductor of the incoming train fills out a special switch list on which he enters, in the order in which the train is made up, the car initial, car number and kind of car. When the train arrives, this list is sent to the yard office where the route clerk, who has information as to the destination, adds the letters designating the classification. The yardmaster then indicates the track number and the list is placed in a ditto machine where six copies are made, one for the conductor at the hump, another for the scale weighmaster and one for each of the three retarder operators, the original being retained in the yard office for record. The copies are delivered by messenger to the parties mentioned.

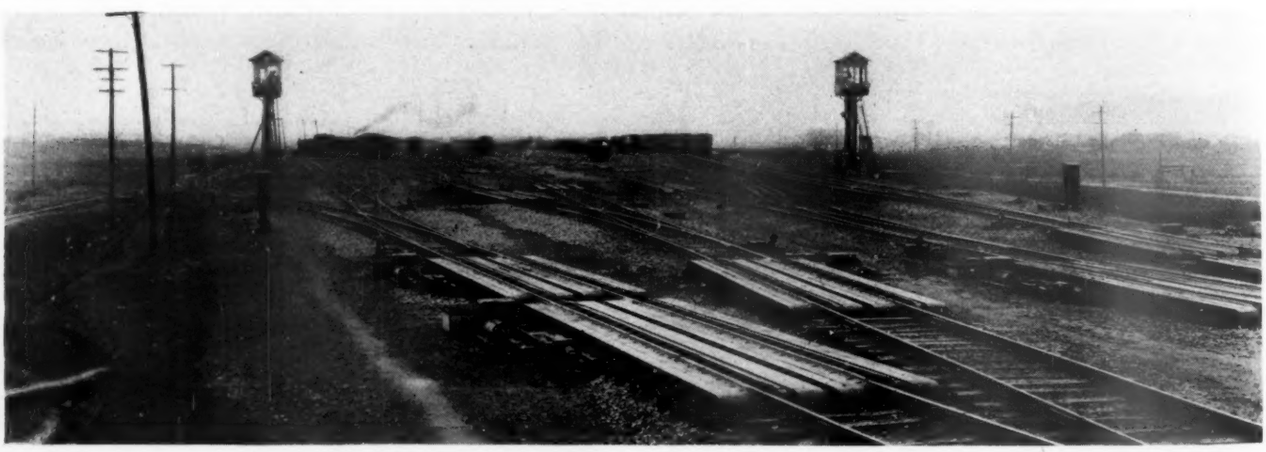
As the trains are pushed over the hump, each car is cut off separately and weighed as it passes over the scales. The track on the scale is 72 ft. long and a car must be on the scale at least 3.5 sec. to complete the weighing operation; this limits the humping operation to four cars a minute. When considering this limitation, as well as the fact that all cuts are for one car only, it is interesting to note that 1,252 cars have been classified during one trick.

After the cars leave the scales, the three operators in the towers throw the switches to send each car to the proper track, at the same time manipulating the retarders to control the speed. Two brakemen are employed to ride the first car down a track to establish the front end of a train. The tracks in the north part of the yard are ordinarily used for making up trains for Columbus, Ohio, while the south half is set aside for trains for the Cincinnati division, seven different classifications being made for each division. Ordinarily cars for only one classification are handled in each train. Trains for Columbus handle 140 cars, totaling 11,000 gross tons. When the rear of a train is established, a caboose is dropped over the hump and attached; the train is then ready to pull out, no departure yard being used in this yard layout. While the cars are being classified, clerks make out regular waybills on typewriters, using the information on the "mine card" and weight tickets. The waybills for each train are assembled and delivered to the conductor before it departs.

Savings Being Accomplished

With the retarder system the entire capacity of the yard, 240 cars an hour, is available at any time. If a considerable proportion of the total day's traffic, say

(Continued on page 541)



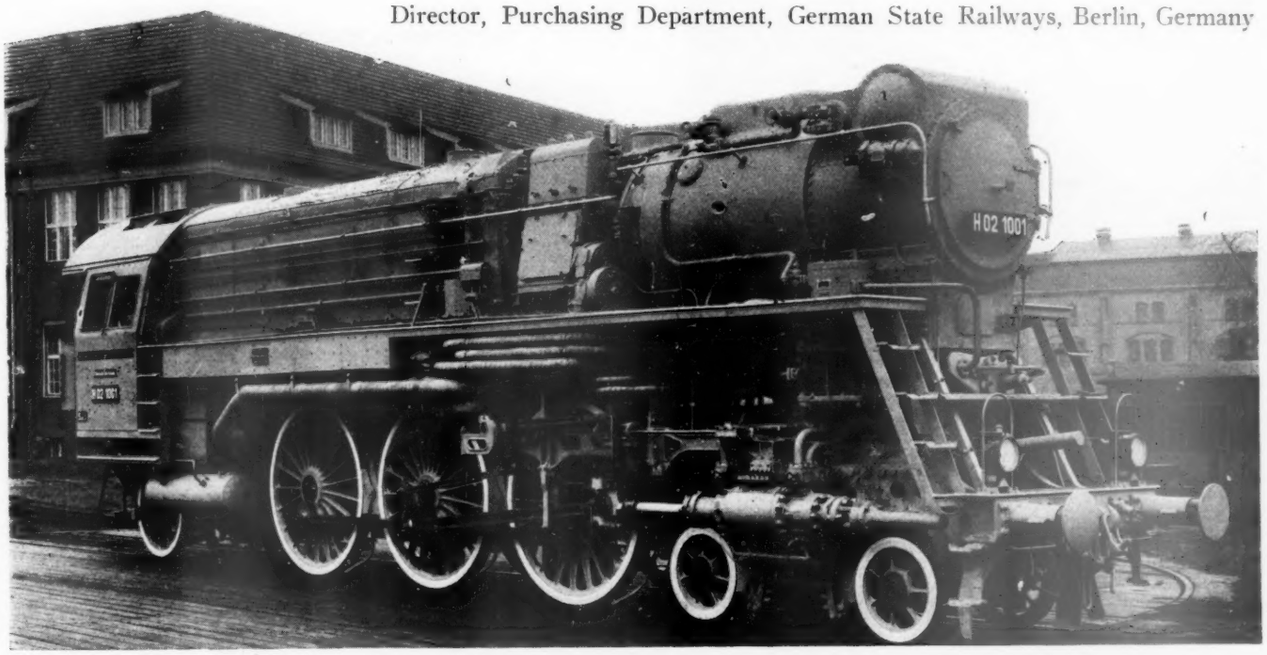
View Looking West from Hump Down Through Classification Yard

Another High-Pressure Locomotive on German State Railways

Standard 4-6-2 type built with the Schwartzkopff-Loeffler system—Tractive force of 37,000 lb.

By Herr Fuchs

Director, Purchasing Department, German State Railways, Berlin, Germany



The Schwartzkopff-Loeffler 4-6-2 Type Locomotive Built for the German State Railways

IN 1928 the German State Railways used over 14,000,000 tons of coal for locomotive fuel. The fuel bill alone for the German State Railways amounted to nearly $88,000,000. It is, therefore, easy to understand why the German State Railways are making strenuous efforts to reduce the consumption of locomotive fuel. In addition to efforts to improve locomotive operating conditions through the introduction of long locomotive runs and improvements in the design of standard power, the management has been making a thorough investigation into the possibilities of high steam pressures. At the present time the German State Railways have in service three locomotives of the Schmidt high-pressure double-pressure design and in addition have been testing a fourth high-pressure locomotive which generates steam by what is generally known as the Loeffler system.

Development and Advantages of Schwartzkopff-Loeffler System

This system was developed by the late Prof. Dr. St. Loeffler. A brief description of what is now known as the Schwartzkopff-Loeffler system of steam generation was published in the March 23, 1929, issue of the *Railway Age,* page 672. This article, which was written by Dr. Hans Loeffler, the son of the inventor, showed a schematic diagram of the principal parts of the Schwartzkopff-Loeffler locomotive, which is a three-cylinder compound 4-6-2 type and develops an estimated tractive force of 37,000 lb. The outside cylinders take high-pressure steam at 1,700 lb. per sq. in. and have a diameter of 8.66 in. The inside cylinder, which is centrally located between the two high-pressure cylinders takes steam at a pressure of 213.35 lb. It is 23.62 in. in diameter and has the same stroke as the high-pressure cylinders, 25.98 in. The diameter of the drivers is 78.7 in. Other principal dimensions and weights are shown in the table.

An advantage claimed for the Schwartzkopff-Leoffler system of steam generation is that the water is vaporized in an unfired boiler drum. The heat produced in the firebox is delivered indirectly by a current of superheated steam. The heat of the flue gases is transferred to a superheater, the heating surfaces of which cannot be injured by scale. The success of the power-plant installations of this system was one of the reasons why the Berliner Mashinenbau Acktien Gesellschaft, formerly L. Schwartzkopff, Berlin, acquired the right to build locomotives having this system. It was shortly after Schwartzkopff had procured this right that it received the order from the German State Railways to deliver a 4-6-2 type locomotive for fast passenger-train service. This locomotive was developed in collaboration with the mechanical department

of the German State Railways and was designed to meet the operating requirements of the standard locomotives of the 4-6-2 type.

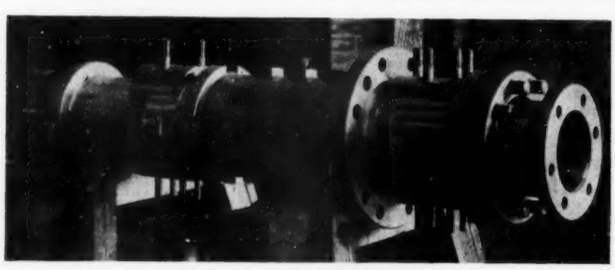
The Boiler—Design and System of Operation

The firebox consists of a system of small tubes which are joined to horizontal headers arranged on both sides of the firebox. A second system of similar tubes, located ahead of the firebox, is connected to the tubes which form the firebox. Steam, at a pressure of 1,700 lb., is pumped through these two systems of tubes. The circulation of this steam through the tubes raises the temperature of the steam to about 843 deg. F.

Table Showing the Principal Dimensions and Weights of the Schwartzkopff-Loeffler 4-6-2 Type Locomotive

Railroad	German State Railways
Builder	L. Schwartzkopff
Service	Experimental passenger
Rated tractive force, estimated	37,000 lb.
Weight on drivers ÷ tractive force	3.58
Valve gear, type	Walschaert-Schwartzkopff
Weights in working order:	
On drivers	132,240 lb.
Total engine	253,019 lb.
Wheel bases:	
Driving	15 ft. 1 in.
Total engine	40 ft. 7¼ in.
Wheels, diameter outside tires:	
Driving	78.7 in.
Front truck	33.46 in.
Trailing truck	49.2 in.
Boiler:	
Type	Loeffler-Double pressure
Steam pressures	H.P.—1,700 lb. L.P.—213.35 lb.
Fuel, kind	Soft coal
Grate area	25.84 sq. ft.
Heating surfaces:	
Low-pressure boiler (evaporative)	882.67 sq. ft.
High-pressure superheater	968.79 sq. ft.
Low-pressure superheater	344.46 sq. ft.
High-pressure feedwater heater	764.27 sq. ft.
Combined boiler heating surfaces	2,960.19 sq. ft.

About one-fourth of the volume of this steam flows to the high-pressure cylinders. The remainder flows to the high-pressure steam evaporator. This evaporator is a drum partially filled with water, and operates at the same pressure as the high-pressure superheater, 1,700 lb. Steam enters this drum through a submerged perforated pipe, and thus evaporates the water in the drum as it gives up its superheat. The circulating pump draws saturated steam from the steam space of the drum, thus continuing the cycle.



The High-Pressure Cylinder

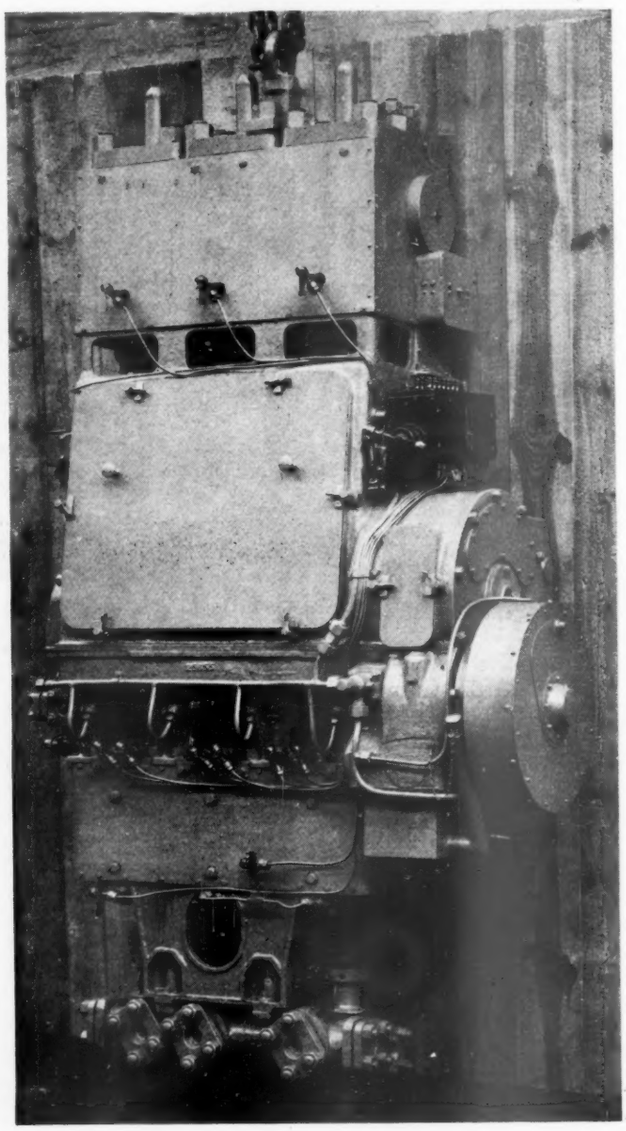
The high-pressure cylinders exhaust at about 256 lb. per sq. in. This exhaust steam passes through an oil separator on its way to the heat exchanger, which is a low-pressure boiler and operates at a pressure of about 213 lb. The tubes of this heat exchanger carry the exhaust steam from the high-pressure cylinders. The exhaust steam condenses as it passes through the tubes and the condensate is pumped to the high-pressure steam evaporator through a heater which is heated by the flue gases from the firebox.

The steam generated in the low-pressure heat exchanger is superheated to about 572 deg. F. in a low-pressure superheater which is located between the high-pressure superheater and a feed-water heater. This steam is then carried to the low-pressure cylinder from which it is exhausted in the usual manner. An air heater is located between the high-pressure feedwater heater and the stock which raises the temperature of the air flowing to the grates to about 302 deg. F.

Features of the Closed-Circuit Construction

Feedwater is fed to the boiler through the heat exchanger, with the object of causing the scale to be deposited in the low-pressure boiler. However, because the tubes in the low-pressure boiler are heated with steam, this formation of scale does not actually take place.

Pumping the steam through the high-pressure circuit requires from one to two per cent of the generated steam. According to statements made by the designers, the use of both high- and low-pressure circuits is perhaps unnecessary. This arrangement, however, was chosen in the first locomotive to ensure the elimination of scale deposits in the high-pressure parts of the system. As the velocity of the water through the high-pressure feedwater heater is high, it is hardly possible that the deposit of scale in the high-pressure evap-



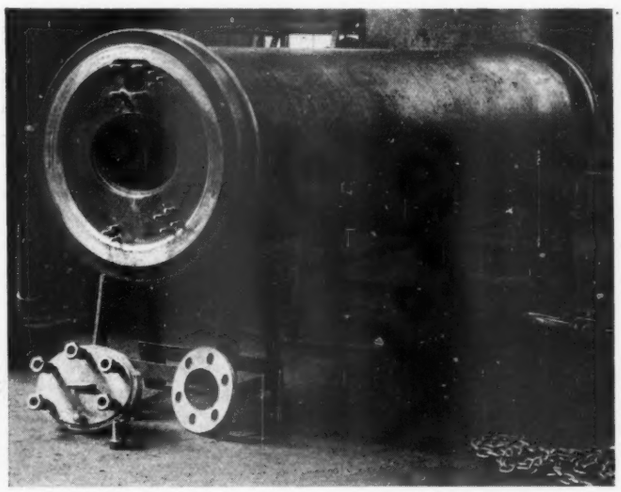
The Steam Circulating Pump

orator drum would have been heavy and even then would not cause damage because fire or hot combustion gases do not come in contact with the drum. Furthermore, according to the designers, if the low-pressure boiler had been omitted, the exhaust from the high-pressure cylinder could be taken directly to the low-pressure cylinder and a simpler arrangement could have been used. The inclusion of the heat exchanger, however, insures additional reliability and increased over load capacity which is secured from the storage of heat in the water in the heat exchanger.

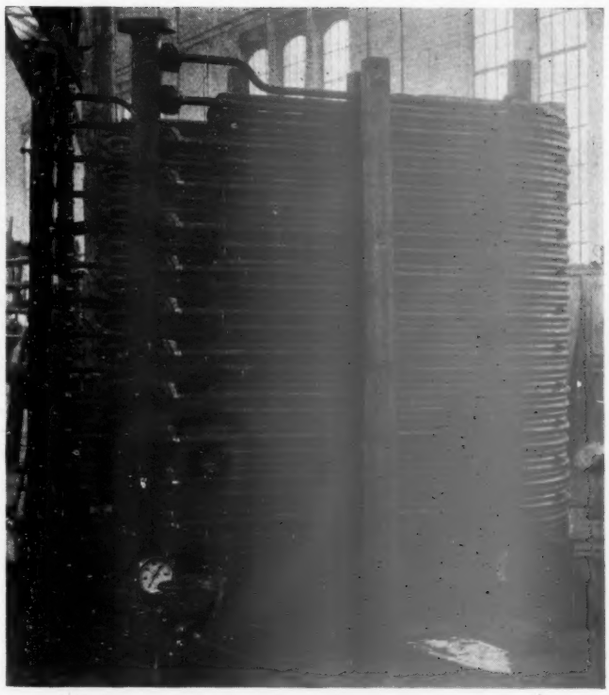
Method of Preparing the Locomotive for Service

The method of preparing the locomotive for service is unusual as compared with customary practices. The high-pressure steam evaporator and the steam circulating pumps are supplied with steam from an outside source. The pumps are then started and are kept in operation until sufficient steam pressure in the boiler is secured to continue the operation of the pumps. A fire is then ignited in the firebox and the outside supply of steam is shut off. The circulating pumps continue to operate as the heat from the firebox raises the pressure in the high-pressure steam circuit to 1,700 lb. The draft on the fire is so regulated that the maximum pressure of 1,700 lb. is not exceeded in the evaporator. Both the evaporator and the heat exchanger are equipped with safety valves.

The design of the running gear, weight, clearance and power requirements of the Schwartzkopff-Loeffler locomotive are similar to that of the 4-6-2 type locomotives standard on the German State Railways. Two nests of high-pressure superheater tubes, the low pressure heater and the high-pressure feedwater heater, are located in front of the water-tube firebox. A rectangular chamber, the walls of which form a continuation of the high-pressure feedwater heater, surrounds the high- and low-pressure superheaters. The top tier of tubes of this chamber can be removed to facilitate the removal of parts of the boiler. The air heater is located between the high-pressure feedwater heater and the smokebox. Air flows to the heater from both sides and is delivered to the enclosed ash pan through ducts which are located under the deck of the cab. The feedwater dome, scum separator and steam dome for the low-pressure boiler are located in the smokebox. The low-pressure heater and oil separator are placed ahead of these fixtures. A collector for the condensed water which flows from the tubes of the low-pressure boiler is placed below the heat exchanger. The drum of the steam evaporator is located under the feedwater heater ahead of the firebox.



The High-Pressure Evaporator with the Manhole Cover Removed



The Water-Tube Firebox Tubes Undergoing a Hydrostatic Test in the Shop—The Firebox-Tube Assembly is Shown Standing on the Forward End

The boiler is provided with two steam circulating pumps each of which has a pumping capacity to circulate 75 per cent of the amount of steam required at maximum load. The circulating pump has three cylinders and is directly coupled to the high-pressure feedwater pump. This pump is operated with low-pressure steam.

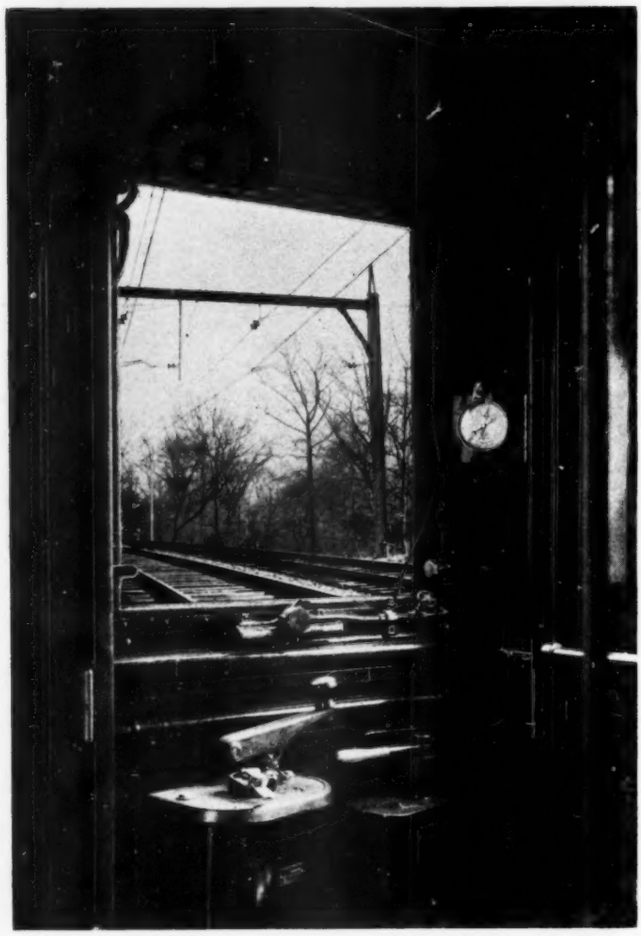
Expected Economies

It is theoretically estimated that the Schwartzkopff-Loeffler locomotive will save 47 per cent in fuel as compared with the modern locomotive of similar type. From these theoretical calculations a fuel economy of from 40 to 45 per cent is expected. Although the design is somewhat complicated because of the increased working pressure, the construction of the locomotive affords at least the same safety in operation as locomotives of customary design, if not a greater safety. It is believed that the small tubes cannot cause damage if any should happen to burst and furthermore the fact that the wall of the unfired high-pressure evaporator is designed without pipe joints is also a feature for increased safety of operation. The designers also believe that the maintenance of the boiler will not be excessive because pipe coils of straight design are used throughout.

The most expensive part of the boiler is the high-pressure evaporator on which no maintenance work should be necessary. It is hoped that the saving effected in fuel consumption will not be offset by the expenses for first cost and maintenance.

The locomotive was first tested at the plant of the manufacturers at Berlin-Wildau and was later tested at the locomotive testing plant of the German State Railways at Berlin-Grunewald. It is now being tested in road service.

Two-Car Units for Lackawanna



Operator's Control Booth Showing Controller and Brake Valve Below Window and Auxiliary Control Box Above

THE cars used in the Lackawanna suburban electrification incorporate a number of innovations, such as 1500/3000-volt motors for multiple-unit cars, motor ventilating air inlets in the roof of the car, 3000-volt heater circuits, and pantographs with self-aligning roller bearings. All but five of the motor cars have roller journal bearings and all cars are equipped with electro-pneumatic brakes.

There are 70 miles of line, including 160 miles of track, to be operated electrically and service will be provided by 141 motor cars and 141 trailers. Motor cars and trailers are semi-permanently coupled together in two-car units and standard M. C. B. couplers are used for coupling units together to make trains of from 2 to 12 cars.

Both motor cars and trailers are of all-steel construction except that the motor cars have aluminum doors, inside finish and roof sheets. All cars have vestibules with trapdoors but without diaphragms and the underframes are of the open channel center sill type.

The motor cars are 70 ft. 3½ in. long over the bumpers, seat 84 passengers and weigh 147,200 lb. The trucks are Commonwealth with wheel bases 8 ft. 6 in. long; the distance between center pins is 45 ft. The trailers are 70 ft. ¾ in., and 70 ft. 6 in. long, weigh 106,400 lb. and seat respectively 78 and 82 passengers. There are toilets in the trailers but none in the motor cars. Included in the 282 cars to be used in electric service are six club cars, 15 combination baggage and passenger cars and two combination mail and passenger cars.



All but five of the motor cars are equipped with Hyatt roller bearings, the five having plain bearings. Five of the trailers have roller bearings and all of the remainder plain bearings. This arrangement permits making up one ten-car train completely roller bearing equipped and another ten-car train equipped entirely with plain bearings. The motor cars to be used in these two trains are provided with watt-hour meters so the power consumption of the two trains may be compared.

The interiors of the cars are finished in unusually light colors. The ceilings are cream and the upper side walls a light buff. The seats are light yellow rattan with dark green metal frames and mahogany side arms. The lower parts of the side walls are also dark green and the floors are battleship gray.

Motors and Motor Ventilation

The motors, and the method of ventilating them, are probably the most radical departure from the usual low voltage railway practice. Each motor develops 235 shaft horsepower (one hour rating) with 1500 volts impressed on the commutator and has a weight of approximately 6900 lb., including gears, gear case, axle linings and other motor accessories. At the same time, the motor is insulated for a working potential of 3000 volts to ground. There are

Electrification

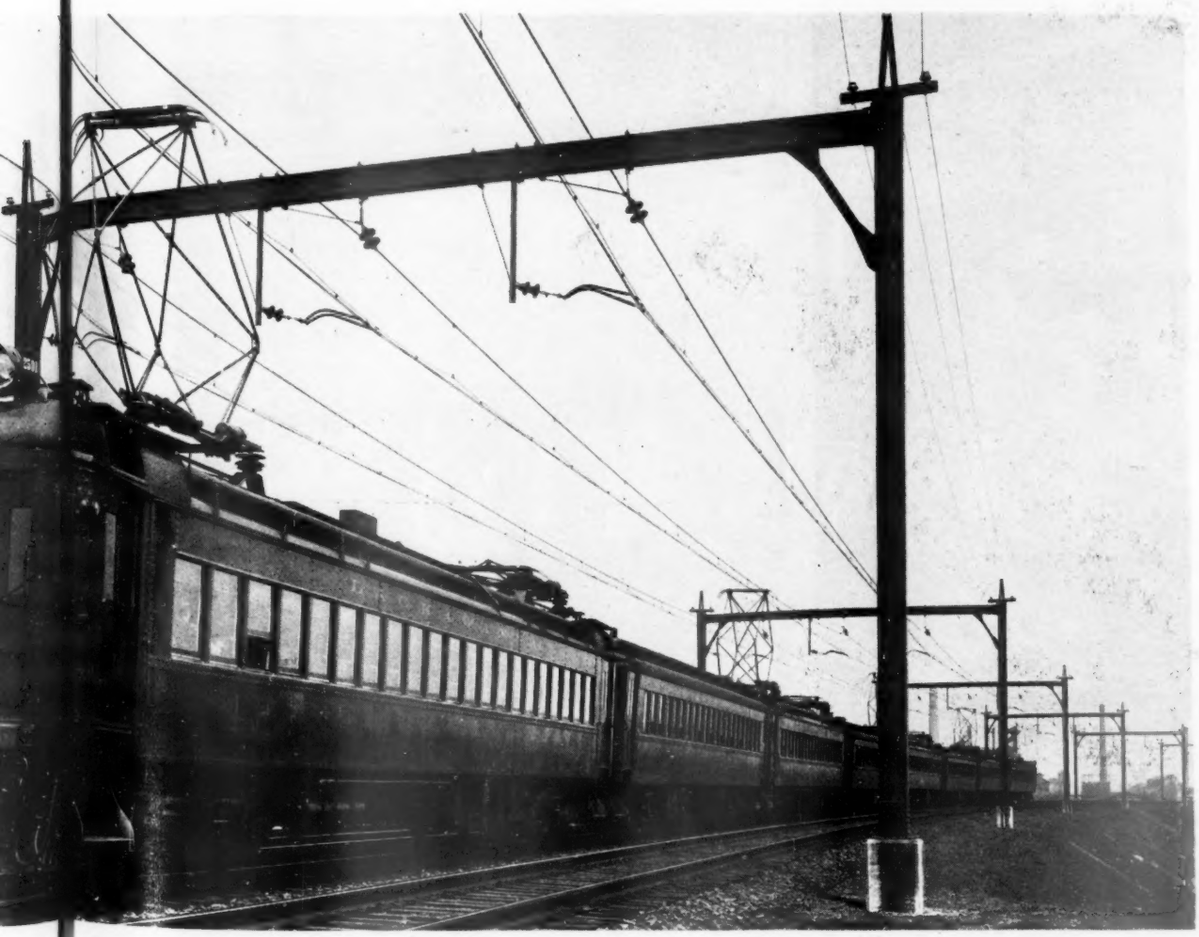
Multiple-unit cars are the first in America to operate from a 3000-volt, direct-current, contact system



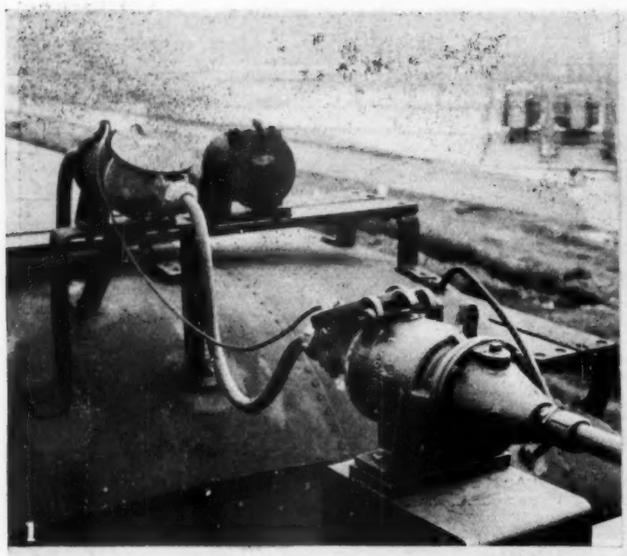
Interior of One of the Motor Cars

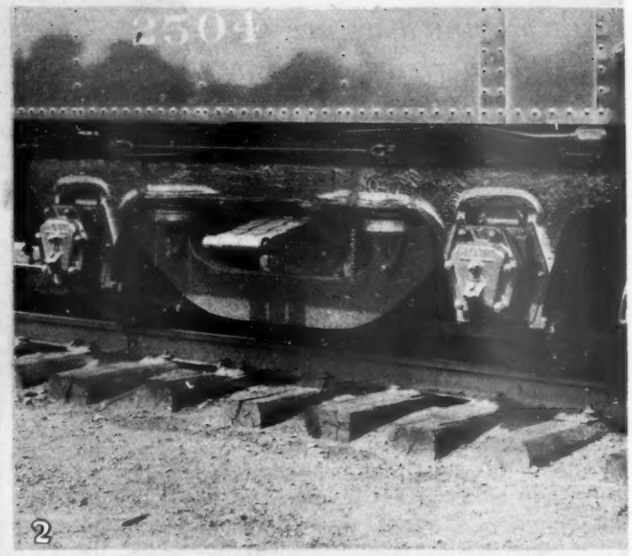
four motors on each motor car in pairs and connected permanently in series. The successful operation of a high voltage motor depends to a great extent on keeping the interior of the motor, particularly the commutator end, clean and free from road dirt, brake shoe dust, snow and other foreign material. To satisfy this requirement, the motor frame operates at all times either at or slightly above atmospheric pressure in order that loose commutator covers and similar conditions will not allow the entrance of foreign material. This condition could have been accomplished by the use of motor-driven blower sets, but it was desired to dispense with these blowers for the sake of simplicity because of the noise and vibration which it was expected they would produce in the motor car. It was also considered desirable to avoid air filters with attendant expense for cleaning.

Experiments made on the test track on a motor-trailer unit showed conclusively that snow and road dirt picked up by the moving train does not swirl around the cars at a height much above the center of the side windows. It was decided therefore to take air for ventilating the motors at each side of the roof at each end of the motor car, and pass it through a

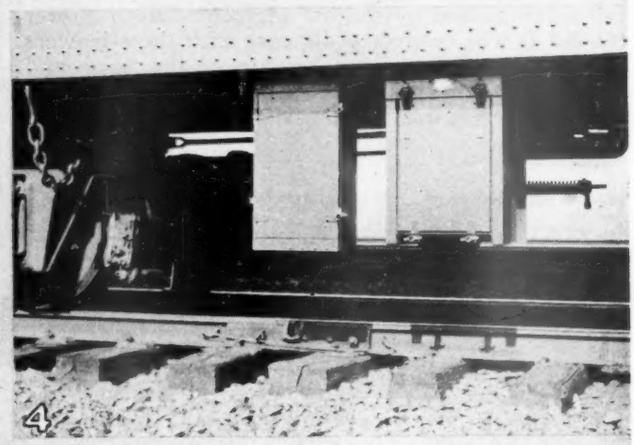


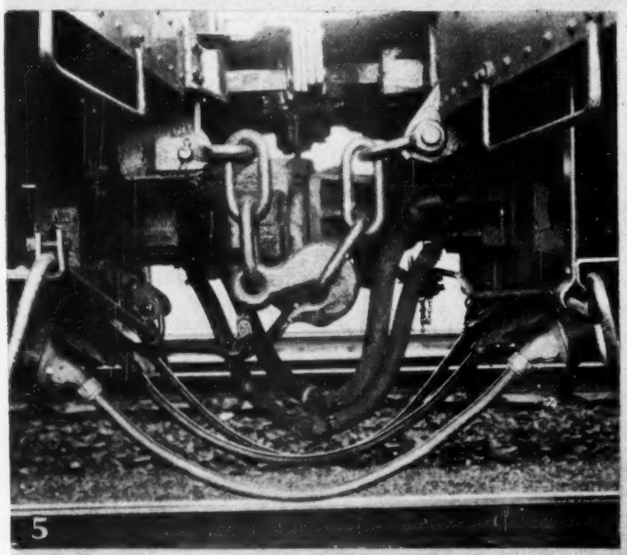
An 8-Car or 4-Unit Train On the Electrified Section Between Hoboken and Newark, N. J.

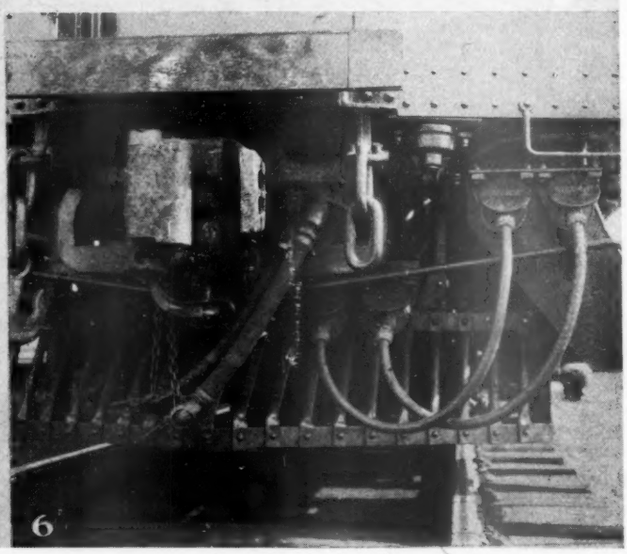












1. Heater Connector Used Between Motor Car and Trailer. 2. One of the Roller Bearing Trucks. 3. The Seat Cushion Has Been Removed to Show the Heater Box. 4. The Only Electrical Apparatus Mounted Under the Trailers are the Heater Fuse and Switch Boxes. 5. Connections Between Motor Car and Trailer. 6. Outer End of a Motor Car—Note Dummy Receptacles at Right



Under Side of Motor Car With One Truck Removed

settling chamber located above the vestibule. Louvres were located at the four corners of the motor car so that air drawn from the side of the car enters this compartment between the ceiling of the vestibule of the car and the car roof.

With this construction, the air is drawn into the louvres at a velocity of approximately 50 ft. per minute and on entering the comparatively large compartment fitted with baffles and located between the vestibule ceiling and the car roof, it decreases in velocity to a sufficient extent to deposit any dirt, snow or foreign material that may have been carried through the louvres.

From the settling chamber the air enters the ducts which carry it to the underside of the car flooring. In these ducts the air velocity is approximately 300 ft. per minute. Two ducts are carried from the compartment over the vestibule at each end of the car to the underside of the car, making a total of four such ducts. Each of these terminates in an opening which is suitably reinforced and is provided with bolts for the receiving of a ring to which the flexible air duct is strapped. This duct consists of two layers of canvas on either side of wire springs which prevent collapsing of the duct. The other end of the duct is clamped to the inlet casting on the motor which in turn is bolted to the commutator end framehead, use being made of a gasket to insure a tight joint.

The ventilating air is delivered to the center of the motor armature at the commutator end by suitable passages in the commutator end framehead. The ventilating fan is located at the pinion end of the armature. It draws the air through the center of the armature and forces it through the motor frame, past the exciting and commutating field coils to the commutator end of the frame, from which it is discharged to atmosphere through the outlet at top of the motor. Inasmuch as the discharge of this ventilating air always takes place at the commutator end, the entire frame is always somewhat above atmospheric pressure when the car is in motion. There is no tendency, therefore, for any foreign matter to be drawn into the motor.

The flexible air ducts are made of white canvas, painted on the outside with a weatherproofing compound having a relatively high ignition point and sufficient body to cool off any impinging sparks or brake shoe flakes that might set fire to canvas.

The four motor leads are brought out on the axle side of the motor. The leads do not cross the motor or touch any part which might cause abrasion. They are clamped to the motor at one end, to the car underframe at the other end, and the connectors between the motor leads and the car wiring are enclosed in insulating tubes clamped to the car.

The armature and axle bearings are of the constant-level, waste-packed type, insuring uniform lubrication at all times. Each motor is equipped with a 22-tooth pinion having a diametral pitch of 2¼ in., and drives a 59-tooth gear mounted on the axle. Four of these motors are mounted on each motor car and as each motor car handles one trailer in addition to itself, the total weight of the two-car unit handled by four motors is 253,600 lb. The 59-tooth gears are of the non-resonant type and effectively eliminate gear noise. Each motor complete, with pinion, gear, gear case, axle linings, and air ducts, weighs approximately 6900 lb. This is exclusive of the inductive shunts, which provide the reduced field or maximum speed running point on the controller.

Three two-car units (6 cars) carrying one-half passenger load when supplied with 3000 volts at the pantographs are designed to have a free running speed of not less than 67 m.p.h. on level tangent track. This is on the basis of 36-in. wheels, which is 2 in. less in diameter than the wheels are when new. New wheels are 38 in. in diameter and may be worn to 35 in. before the clearances under the motors become limiting.

Dynamotor, Air Compressor and Brakes

For control, operation of the air compressor, and auxiliary power, the 3000-volt current is stepped down by a 3000/1500-volt dynamotor which is hung on the underside of the car body on four rubber cushioned suspension bolts. The dynamotor has two 1500-volt commutators and armature windings connected in series and a separate 40-volt armature on the same shaft, all located between the two bearings for supplying power to the controls and for lighting. A ventil-

ating fan which draws air through the entire set is mounted on the same shaft. The intake air passes through a centrifugal type air cleaner located outside the bearings.

The air compressor is driven by a 1500-volt motor which is connected across the low-voltage commutator of the dynamotor. It is of the center-gear type and has a displacement of 35 cu. ft. of free air per minute. It is hung under the car on a three-point cushion suspension similar to that used for the dynamotor.

Type UCE brakes are used on all cars. Electrically-operated magnet valves control the operation of the brakes and cause simultaneous application of brakes on all cars in the train.

Control

The master controllers located in opposite ends of each two-car unit are of the low-voltage drum type and the one which is in use actuates the 32-volt control circuits which govern the motor controllers throughout the entire train. The motor controllers are mounted under the cars. Each controller includes a reverser, cutout switches, accelerating relay, line potential relay and field shunting relay in addition to contactors for making the series and series-parallel motor combinations. The contactors are all cam-operated and the cam shaft is actuated by an air engine of the opposed air pressure type.

An automatic line breaker protects the high-voltage circuits from overload and short circuits. Additional protection is provided by an explosion chamber type main fuses mounted on the roof of the car. Three-thousand-volt fuse are also used to protect heaters and auxiliary apparatus.

The master controller is equipped with a deadman's release and emergency air brake application feature which functions if the operator's hand is removed from the controller. When the controller is moved to the full-speed position the acceleration of the train is controlled automatically and is limited by the current flowing in the motors. After the motor controller is advanced one position, it remains in that position until the current has dropped to 185 amperes before advancing to the next. The acceleration rate is adjusted to 1½ miles per hour per second with six-car trains and the maximum power at starting required by a 12-car train is 9,000 kw., or approximately 12,000 horsepower.

Above the window at the motorman's position is a push-button control box for operating the pantographs, dynamotors, heaters, circuit breakers, control circuits, headlights, marker lights and vestibule lights. This is a low-voltage control which operates the low-voltage circuits directly and the high-voltage circuits through 3000-volt electrically-operated contactors.

Pantographs and Jumpers

The pantographs used have self-aligning roller bearings. This feature gives only three to four pounds difference in pressure against the contact wire between the up and down movement of the pantograph. The normal pressure against the wire is 28 lb. and the working range is from 15 ft. 6 in. to 25 ft. 3 in. above the rail. The locked down height of the pantograph is 15 ft. 3 in.

There is a grounding switch for each pantograph and the first duty of a man climbing to the top of a car is to close this switch, the operation of which grounds and holds the pantograph in the locked-down position. Fifty of the pantographs have single contact shoes and the other 232 (there are two on each motor car) have double shoes. The pantograph pressure for the single-contact pantographs is 18 instead of 28 pounds.

Two train line jumpers for control circuits are mounted below the bumpers and used between units and two between motor car and trailer. There is also a third jumper between motor car and trailer for the 32-volt lighting and battery circuits. The jumpers used have plugs at each end and there are four sockets on each end of a two-car unit. This duplication of sockets avoids the necessity of crossing the jumpers over with the air hose connections.

There is a 3000-volt heater connection on the car roofs between the motor car and trailer. This is provided with a bronze tiller rope and unlatching device which automatically releases the plug on the motor car in case the cars are separated. The plug thus released does not have voltage on it since the trailers do not have pantographs.

Heaters

There is an electric resistance heater under every seat mounted in a steel box and the conduit carrying the feeder wires is extended along each side of the heater box to form a foot rest. The heating elements are mounted near the window end of the box, thus allowing ample creepage distance along the lead wires which enter at the aisle end of the box. Each heater box is connected to a ground wire in addition to being clamped to the car body.

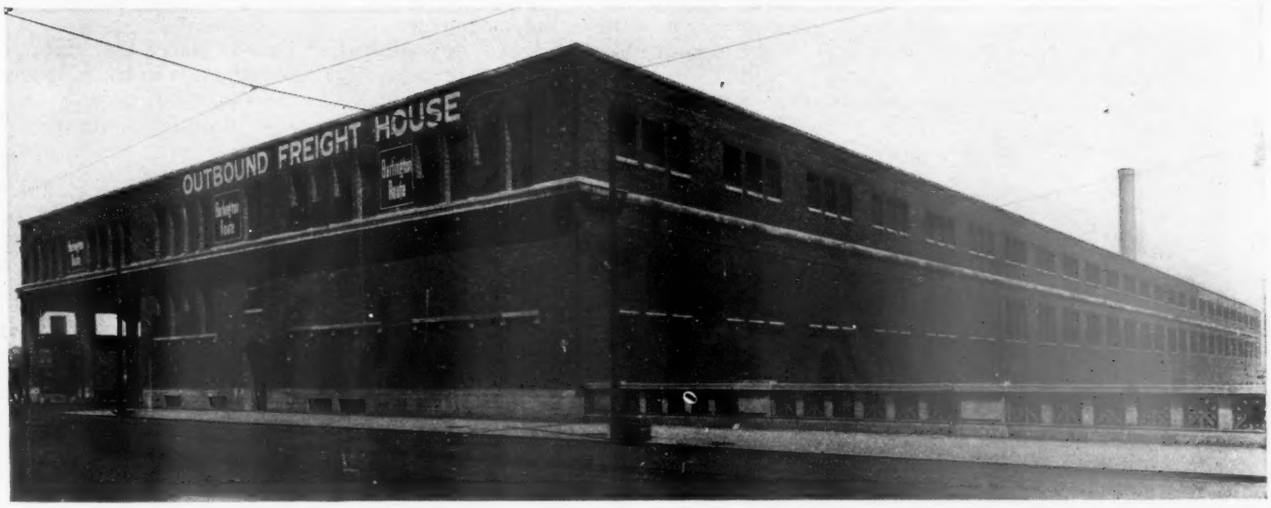
The heat is controlled by thermostat and there are two heating circuits which can be turned on separately or together, depending upon the weather and at the discretion of the operator. The total heating load in each car is 28 kw. plus three heaters totaling 3½ kw. in the motorman's vestibule.

Lighting

The new motor cars are lighted by eleven, center-mounted, 50-watt lamps in corona bowl glassware and provide a lighting intensity on the reading plane of about nine foot-candles. The generator and lamp voltages are controlled by the same type of regulators that the railroad uses for its axle light equipment. The lights and heater circuits are controlled by Safety toggle switches in a metal cabinet in the regulator locker. There are two heater switches, two interior light switches, one switch for the vestibule lights and one for the marker lights. There is a Pyle-National headlight on each end of a two-car unit controlled from the motorman's position. The 300-ampere-hour lead batteries used are mounted under the motor car. This arrangement places this weight on driving instead of trailing wheels, makes the operation of the motor car independent of the trailer and avoids the voltage drop through connectors which makes proper battery charging difficult when the battery is on the trailer.

About half of the cars are now delivered and a number are in service on the Montclair branch and for the training of crews. The electrical equipment is being supplied by the General Electric Company and the motor cars were built by the Pullman Company. The equipment, with the exception of the motors, is shipped from Erie, Pa., to Chicago, where it is installed and the cars are shipped to the Kingsland, N. J., shops of the Lackawanna where the motors are installed. Heaters were supplied by the Consolidated Car Heat-

(Continued on page 544)



One of the Burlington's Freight Houses in Chicago

Abbreviated Abstracting Aids Stations

Chicago, Burlington & Quincy investigating committee produces substantial savings

IN August, 1928, an experimental system of abbreviated abstracting was put into effect at the Kansas City, Mo., freight station of the Chicago, Burlington & Quincy. This proved so successful, after a six-months' trial period, that the same system has now been installed at 35 of the larger stations on the Burlington. A special committee of two was appointed to make a study of the situation, and, since abstracting may be said to be the crux of freight station office work, their investigations covered the entire field of office practices. As a result of abbreviated abstracting, and of the associated investigations, the Burlington has already made payroll savings amounting to $115,000 per year, and, by the time the study is completed, it is expected that this figure will reach $150,000.

In accordance with the usual practice, all Burlington station agents were formerly required to make out daily abstracts of freight received and forwarded, and a daily "pro" sheet, or record of freight bills and monthly uncollected. These were made out by hand, or on long-carriage typewriters, and were, of course, required to balance, the balancing being done by pencil computations, a laborious job, which, at some of the larger stations, required the services of a clerk for balancing alone. These three reports required the filling in of 39 columns, including the freightbill, waybill and car numbers, kind of freight, etc.

All of this information was essential for the records of the station accounting department at one time. However, with the installation of the punch card system of accounting in the general offices, the necessity for much of the statistical information in the old form ceased to exist. In 1928, therefore, a system of abbreviated abstracting was evolved, and in August of that year it was installed at the Kansas City freight station for trial. The results were carefully studied, and, on the basis of this study, a similar system was made effective at the freight stations at Omaha, Neb., in January, 1929, and at St. Louis, Mo., in April, 1929, followed by the remainder of the 35 stations. Further extension of the system will be made as soon as the necessary investigations are concluded at other stations. In no case, however, was the system inaugurated until a definite payroll reduction was in sight, as a result of investigation of the possibilities.

This work was entrusted to a committee of two, consisting of a transportation inspector, with experience as a freight agent, and the assistant auditor of freight accounts, with experience as a traveling auditor. This combination of operating and accounting experience has worked out well, particularly since the committee was given full authority from the vice-president in charge of operation on the one hand, and the comptroller on the other, to make payroll reductions or changes in methods.

The New Abstracts

The new abstract forms are extremely simple. They consist of listings of the waybills for freight received, and for freight forwarded, divided as between foreign and local traffic. These two reports take the place of the three previously required, and permit the elimination of the "pro" sheet. They require the filling in of only six columns each, or 12 in all, as compared with the previous 39 columns. Instead of being made out on long-carriage typewriters, or by hand, they are typed on special listing machines purchased for the purpose. These machines are equipped to write 9 columns, 3 non-add, and 6 add, and

provide an automatic balance which requires only a glance before the report is taken from the machine, instead of the long hours of checking and cross-checking, with which every agent is familiar.

The new freight received abstract gives the following information:

Freight bill number
Total collect
Prepaid beyond
Date paid
Freight
Advances
Prepaid

The freight forwarded abstract consists of the following columns:

Car number (on carload only)
Waybill number
Total collect
Date paid
Freight
Advances
Prepaid

In both cases, of course, the "date paid" column is not filled in at the time of making the abstract, being entered on the carbon copy later as a matter of office record.

The freight received abstract now runs to 15 and 16 sheets daily at the larger stations, and the freight forwarded to 25 sheets. Formerly, these ran 20 to 30 sheets respectively, with the voluminous "pro" sheet in addition. From this it will be observed that the saving in mechanical handling and typing alone is considerable. The listing machines required for this work are sufficiently expensive to make it imperative that they be used to their maximum capacity. With this in mind, an arrangement has been worked out whereby each machine is in use at least eight hours a day, and, in some cases, 10 hours. At the latter places, clerks report for duty at 7 a. m., instead of 9 a. m., thus providing for the extra two hours' work on the machine.

This arrangement has been worked out in various ways. At some stations, the abstracting work is sufficiently heavy to insure the constant use of the machine. At others, the abstracting work of nearby stations is taken over. For example, the Omaha station force handles the abstracting for the Council Bluffs station, just across the river. The station at St. Louis now handles the abstracting for Quincy, Fort Madison, Hannibal and Keokuk, as well as its own. Complete records for preparing the abstract are mailed to St. Louis from these stations, by certain specified trains in each case, so that there will be no delay. After the abstracts are made, they are mailed directly by the St. Louis station to the office of the auditor of freight accounts in Chicago, carbon copies being sent back to the outlying agency as office records.

Other Developments

In order to get the full benefit from the abbreviated abstracting, the committee found it advisable to check all the office operations at the stations studied. One of the principal additional advantages gained was found to be the increased possibilty for standardization. New filing systems have been installed, which are uniform with the best at any other stations, and the methods of making up the abstract have been thoroughly standardized. The agents making use of the abbreviated abstracting are encouraged to visit other stations where the system is in effect. Many have taken advantage of the opportunity and this, coupled with assiduous work toward standardization, has resulted in a much greater uniformity of practice than would have existed otherwise.

The fact that the committee is composed of one representative each of the accounting and operating departments has made it possible to put in these changes at once, with the assurance that they would be satisfactory to both departments.

The agents themselves had already placed their forces on a rock-bottom basis when the reduction in traffic made this step necessary. Therefore, the saving of about $115,000 produced by the abbreviated abstracting and associated investigations represents a permanent saving, that will be maintained, regardless of traffic conditions.

Freight Car Loading Increases

WASHINGTON, D. C.

REVENUE freight car loading showed a marked upward turn in the week ended August 30, following increases in the two preceding weeks after it had been declining for several weeks. The total was 984,504 cars, as compared with 940,549 in the preceding week. This was a reduction of 177,596 cars as compared with the corresponding week of last year and of 132,207 cars as compared with 1928, but these reductions are less than have been reported in several previous weeks. Grain and grain products showed an increase of 6,162 cars as compared with 1929 and of 2,344 cars as compared with 1928, but all other commodity classifications showed reductions and all districts reported less loadings than in the corresponding week of both years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, August 30, 1930

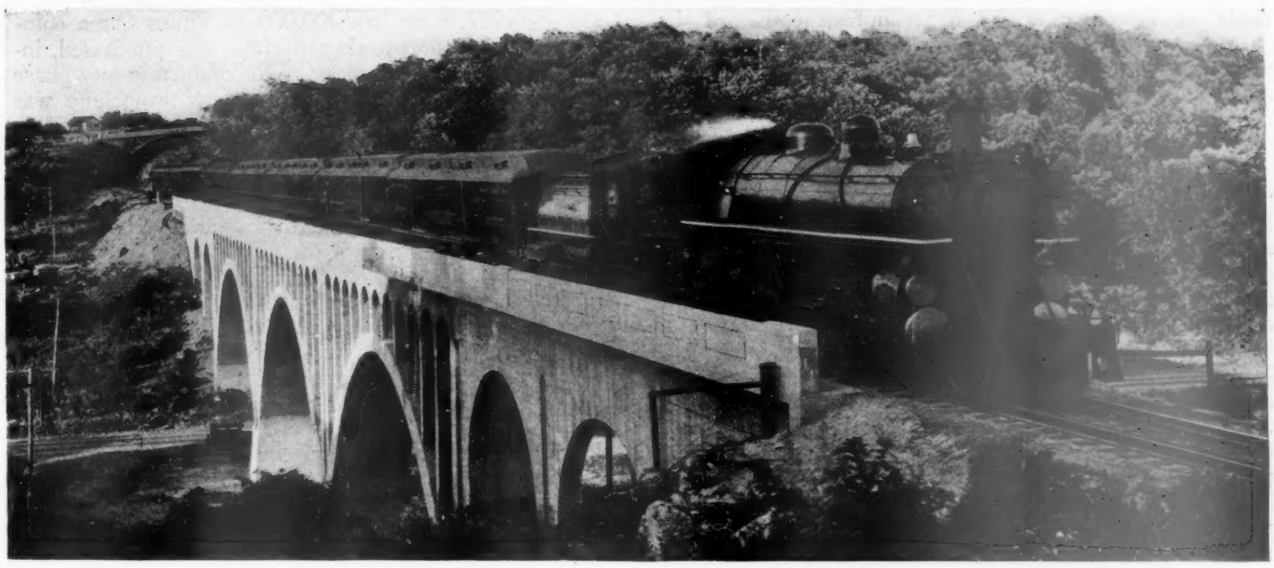
Districts	1930	1929	1928
Eastern	218,141	262,570	256,421
Allegheny	197,725	239,620	225,502
Pocahontas	56,571	66,920	58,304
Southern	130,420	153,042	145,449
Northwestern	157,936	184,761	174,422
Central Western	145,533	163,481	169,406
Southwestern	78,178	91,706	87,207
Total Western Districts	381,647	439,948	431,035
Total All Roads	984,504	1,162,100	1,116,711
Commodities			
Grain and Grain Products	59,658	53,496	57,314
Live Stock	24,554	26,828	27,690
Coal	168,879	189,700	178,089
Coke	8,843	11,859	9,827
Forest Products	42,966	69,823	66,889
Ore	55,748	75,237	68,610
Merchandise L.C.L.	239,175	266,743	263,436
Miscellaneous	385,041	468,414	444,856
August 30	984,504	1,162,100	1,116,711
August 23	940,549	1,137,966	1,080,698
August 16	922,823	1,102,567	1,057,909
August 9	904,157	1,092,153	1,044,268
August 2	918,335	1,105,920	1,048,821
Cumulative total, 35 weeks	31,433,405	35,377,737	33,754,221

The freight car surplus for the week ended August 23 averaged 436,735 cars, a decrease of 1,975 cars as compared with the week ended August 15. The total included 223,997 box cars, 155,950 coal cars, 26,342 stock cars, and 14,297 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 30 totaled 72,428 cars, an increase over the previous week of 8,414 cars, but a decrease of 5,415 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
August 30, 1930	72,428	31,955
August 23, 1930	64,014	30,247
August 16, 1930	64,043	29,276
August 31, 1929	77,843	39,809
Cumulative Totals for Canada		
August 30, 1930	2,085,010	1,185,279
August 31, 1929	2,337,638	1,450,472
September 1, 1928	2,279,649	1,365,013



The Flying Crow on the Kansas City Southern

Kansas City Southern Expands Test and Inspection Work

Seven years see three-time increase in activities—Rejections of new materials cut 80 per cent—Dynamometer results

By M. A. Hall

Superintendent of Machinery, Kansas City Southern, Pittsburg, Kansas

IN the latter part of 1929, the test department of the Kansas City Southern observed the seventh year of its organization by moving into new and larger quarters. The new quarters and equipment are a great improvement over the first quarters and reflect the enlarged importance and increase of this work on the road. The equipment includes a testing machine of 400,000 lb. capacity and a $75,000 dynamometer car. The work extends from the preparation of specifications to the supervision of water-treating plants. The number of inspections and tests made of materials has increased over three times, while the rejections of purchased materials have been reduced over 80 per cent. Engine failures resulting from leaking tubes and boilers have been reduced over 85 per cent, and the savings to the company from dynamometer work is expressed in six figures.

Establishment of the Laboratory

The test department and laboratory was established in 1922 chiefly to meet the urgent need of studying the properties of new materials and their performance under various working conditions in service. The first laboratory was a small room at the rear of the office of superintendent of machinery in Pittsburg, Kan. This was equipped to make chemical analyses of coal and fuel oils, lubricating and other oils, paints, water for sanitary as well as industrial purposes and an occasional analysis of certain metals. Seven locomotive water-treating stations were placed in service in 1922 and their operation was also placed under the direction of the laboratory.

To maintain the desired standards of material, it became necessary to perfect certain specifications for the guidance of the manufacturers and the test department in checking and analyzing the raw and finished products, and in a short time the personnel was enlarged to include the inspection of all raw materials as well as manufactured products. This inspection is divided into three phases, visual inspection, chemical analysis and physical determinations. The visual inspection checks the material or product for workmanship, conformity to specified plans, dimensions and defects. The chemical analyses determine the various physical properties, and the physical tests, the strength and structure. The function of these inspections is to promote alertness on the part of the manufacturers when producing materials to conform to a certain specification and has been found val-

uable in detecting errors in manufacture caused by carelessness or misinterpretation of the specification or plan. Such errors, if not discovered, are apt to prove costly.

Service Testing Begun in 1923

With increased personnel, the program for 1923 began with the improvement of the existing material specifications and the drafting of specifications to embrace additional materials. The first purchase of materials under these specifications was made in July, 1923. Prior to that time extensive analyses had not been conducted of steels, but, with the development of various alloys, the laboratory began a study of these steels to determine, if possible, which would best meet the requirements of the service. These investigations led to actual service tests and at the present time embrace 77 items of material, including paints, packing, steels for piston rods, side rods, brake cylinder leathers, brake shoes, tires, etc. The years 1924 and 1925 were devoted to establishing records of all analyses of various materials and, in addition, a survey was made of all water conditions on the system for sanitary and industrial purposes.

In 1926, the scope of the test department was further expanded and divided into two branches under the supervision of the mechanical engineer. The physical and chemical analysis, as well as treatment of water, was placed under the direction of the chief chemist and formed one branch, while the other department was treated with the purchase of a modern dynamometer and track inspection car, operating under the direction of the dynamometer engineer, for conducting all road tests. In addition, a Rockwell diamond point testing machine was purchased for determining the hardness of metals.

During 1927, a modern 400,000-lb. Tinius Olsen compression and tension testing machine was purchased, including all accessories necessary to conducting any phase of railway physical tests. This type of machine was selected because of the wide range of work permissible and the sensitiveness of the weighing beam, being capable of pulling a wide range of materials, from the finest of wire to round bars of 3 in. in diam. With this machine, it became possible to inaugurate a plan for testing the tensile strength of welds and studying weld structures. The results obtained have been the means of increasing the efficiency of the autogenous welding to a high degree, or considerably above that which is required in the industrial field. The sanitary survey of all water supplies was continued throughout the year and seven additional boiler water treating plants were placed in service.

During 1928, the additional equipment was purchased and plans drawn for a new and larger chemical and physical testing laboratory which was provided in 1929.

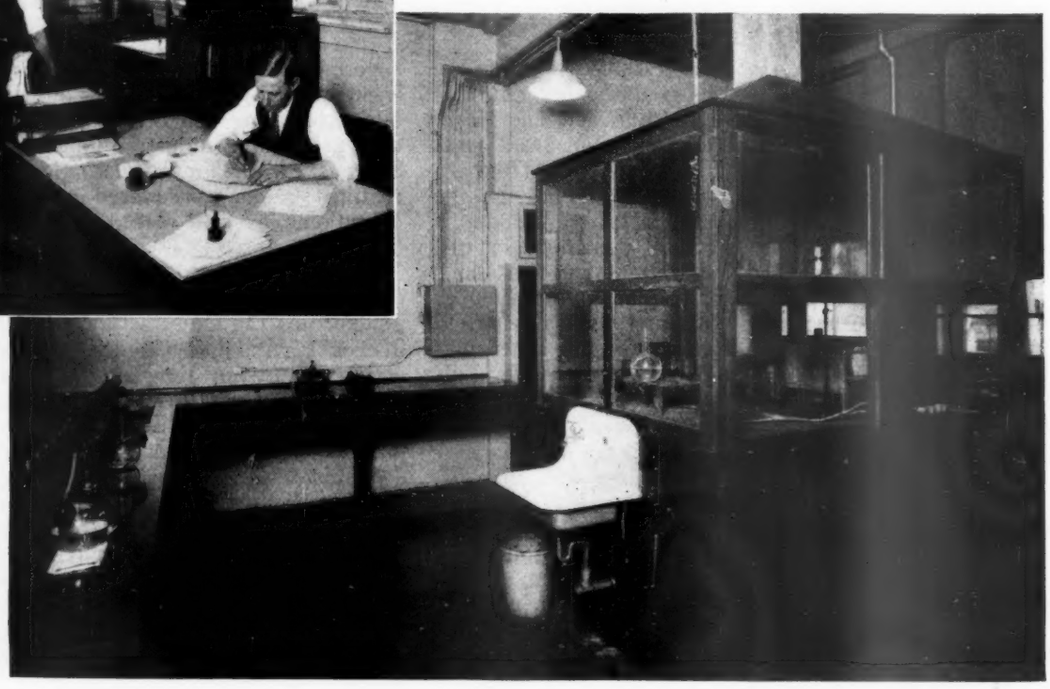
Table I

	Chemical Analyses	Material Inspections	Physical Tests	Total
1923 (6 months).....	811	376	....	1,178
1924	1,367	683	....	2,050
1925	1,660	831	....	2,491
1926	2,546	1,860	607	5,013
1927	2,518	2,104	1,683	6,305
1928	3,157	1,905	1,791	6,853
1929	3,082	2,649	1,941	7,672

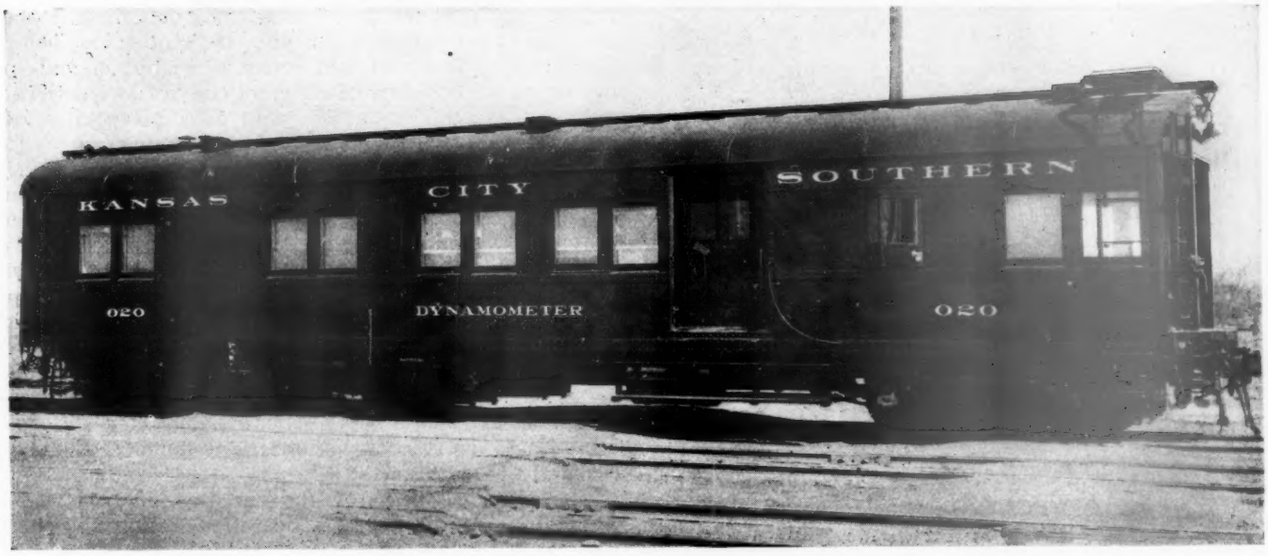
The new quarters consist of three large rooms with a small dark room for film developing purposes. Besides the machine mentioned, the new laboratory is equipped with a Fairbanks concrete testing machine to determine the tensile strength of concrete, while a thermostatic drying oven is a modern feature. An electric machine for pulverizing coal, ash and other materials for analysis is provided, and the chemical apparatus is complete for the analyzing of oils, gasoline, paints, paint oils, cements and water for both sanitary and industrial purposes; also facilities for making chemical analyses of cast iron, steels, non-ferrous and ferrous metals and for making micro etchings.

The establishment of definite requirements in material specifications is reflected in the fact that in 1923, 59





Sections of the New Laboratories at Pittsburg, Kansas



The New Dynamometer Car Is One of the Best

per cent of the material inspected was rejected because of not conforming to specifications, while in 1929 this was reduced to 8.3 per cent of the total material purchased to specifications. Table I, on the preceding page, indicates the progress made in the laboratory in conducting chemical analyses, inspection of materials and physical tests for the period 1923 to 1929, inclusive.

Reduce Engine Failures

In addition to following up the laboratory work, the test department has supervised the treatment of boiler water at the 14 treating plants in operation at this time. The soda ash and lime method is used and the results obtained in the elimination of mineral salts which cause scale formation and corrosion of the interior boiler surfaces are reflected in the following reduction in engine failures caused by leaking flues and boilers:

Year	Failures	Miles Per Failure
1921	156	30,287
1929	22	220,474

During 1928 the 14 treating plants produced 286,057,690 gal. of treated water, removing 306,459 lb. of scale-forming substance, which corresponds to a money saving of $44,124. The total cost of operating the plants was $23,017, which includes labor, water compounds and interest on the investment, representing a net saving of $21,107. Five additional treating plants have recently been installed and one is now under construction.

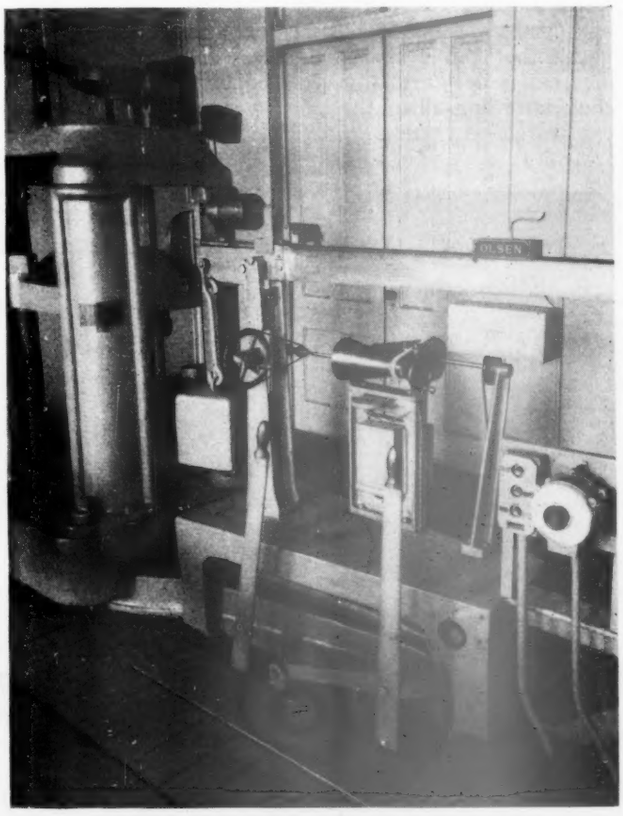
Laboratory tests are also conducted to determine the proper methods for kiln drying lumber. These investigations have developed the results of improper treatment. The most important is the so-called "case hardening," causing warping, cupping and shrinkage, and, indirectly, checking. Uneven drying will result in warping, while too rapid drying will cause honey combing, case hardening and surface checking.

Attention has already been called to the fact that service tests are being conducted with 77 various items of material, devices and designs used in the manufacture of standard parts. The service tests conducted in the past have produced exceptionally good results, and many of the devices, designs and materials have been adopted as standard.

Big Savings from Dynamometer Work

With the purchase in 1926 of the dynamometer car, the investigations were extended to road tests and track inspection. This car is of the latest design, equipped to register a maximum buffing shock of 1,250,000 lb. and a drawbar pull of 350,000 lb. at the chronograph table. The table is equipped with recording pens, operated mechanically, electrically and hydraulically indicating the following data on a moving tape:

1—Six second intervals
2—One minute interval
3—Location on road
4—Drawbar pull in pounds
5—Drawbar buff in pounds
6—Speed in miles per minute
7—Time



The 400,000-Lb. Testing Machine



A Corner of the Laboratory

8—Distance traveled
9—Train line pressure
10—Brake cylinder pressure
11—Boiler steam pressure
12—Integration of drawbar pull curve
13—Fuel fired
14—Water feed to boiler
15—Steam indicator cards taken right side
16—Steam indicator cards taken left side
17—Throttle position
18—Reverse lever position
19—Temperature of superheated steam
20—Calorimeter equipment

The car is also equipped with lockers for test apparatus, tables for chart calculation, desks, electrical control panel, lavatories, showers, wardrobe, dining room which can be converted into sleeping quarters, linen lockers, cooking supply lockers, kitchen, chef's and porter's section, Baker heating system, ice box, and, under the frame, storage bunkers for coal and wood. The car is designed to accommodate eight men and the chef, affording all of the modern conveniences for road test work and travel.

The dynamometer car is used: To determine if the maximum performance of the locomotive is being obtained; to test fuel and water consumption and to determine the economy of different class of locomotives; to determine the maximum train of a given class of locomotives which can operate over a ruling grade; to study train performance and establish a standard rating for locomotives; to determine the most economical train to handle, based on fuel, water, labor and time between terminals; to determine the efficiency of different types of brake equipment, as well as the personal element in brake application; to determine the quality of lubrication of various oils, plain and roller bearing, on different types of cars and trucks; to determine the efficiency of new devices, such as feedwater heaters, boosters, universal valve, desaturators and the application of pulverized fuel to locomotives. The dynamometer car has been leased from time to time to a number of other roads in the middle west.

The purchase price of the car was approximately $75,000. The first year's operation resulted in the revision of tonnage ratings on three districts. Assuming that each locomotive dispatched and handled the full increased tonnage rating, a saving of $130,000 would have resulted for the year 1926. On the same assumption, the savings for the entire line during the year 1928 would have been $311,209.

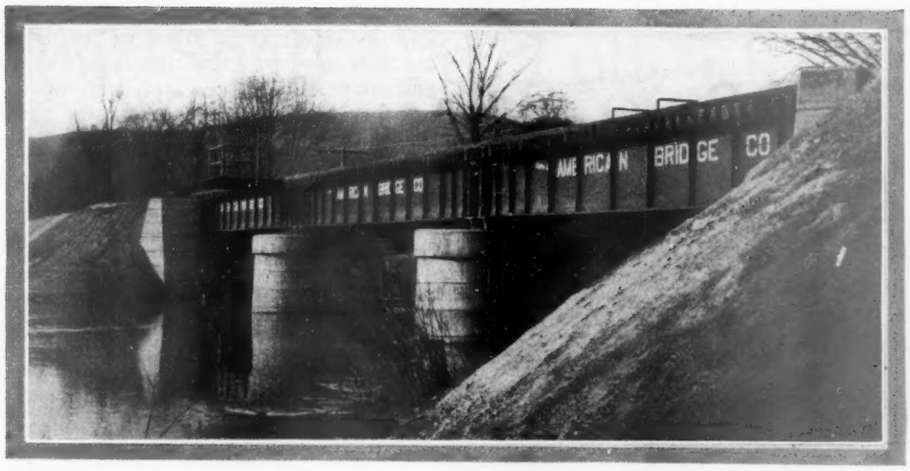
The benefits derived by the mechanical department from the use of this car include the study of different types of locomotives for different service, various types of devices and designs, train haul, etc., while the engineering department has studied rail resistance and grade reduction, and the transportation department has studied new devices for promoting fuel economy and established proper tonnage ratings over the various districts.

Since the organization of the test department, 88 material specifications have been prepared, covering the purchase of 204 standard articles of material. These specifications are divided into two groups, one group applying to material for general use, the other covering the special or more important materials. The specifications are revised frequently to meet new requirements and the advancement in manufacturing methods.

* * * *



Along the Bergen-Oslo Line of the Norwegian State Railways



Modern Plate Girder Bridge Replacing Timber Trestle at Tippecanoe, Ohio

B. & O. Reconstructs 63 Bridges

Rating raised 20 per cent on 290 miles of line—Entire project carried out in winter months

By P. G. Lang, Jr.

Engineer of Bridges, Baltimore & Ohio, Baltimore, Md.

THE work of reconstructing and strengthening bridges on the Baltimore & Ohio, between Fairmont, W. Va., and Lorain, Ohio, affords an outstanding example of the application of modern construction methods and the expeditious prosecution of construction work under unfavorable weather conditions. This line is subject to very heavy freight traffic during the period of the year when the Great Lakes are open to navigation, and, as the volume of this movement is considerably diminished during the winter months, that season was chosen for the prosecution of the work.

Work on this project as a whole was commenced on October 21, 1929, under a schedule which required its completion on or before April 1, 1930, that is, within a period of approximately five months. The work involved a total of 63 bridges which are distributed over a distance of about 350 miles.

The actual beginning of the work was preceded by a careful but expeditious study of the physical conditions on this line. The selection of bridge types for the various crossings was, to a large degree, regulated with regard to the facility with which the necessary materials could be secured and the field work performed. Among the measures considered and adopted with a view to expediting the work were the filling of some openings with embankments over concrete pipe which is a standard product and procurable on short notice; the use of reinforced concrete trestles, the component parts of which could be constructed in the railroad company's plant at Washington, Ind., and quickly erected in the field by company forces; and the use of concrete-metal spans, in view of the promptness with which it is usually possible to obtain I-beams of any desired dimensions. While it was necessary to use special steel spans and to reconstruct or extend substructure units at many points, the adoption of readily-built bridges of the foregoing character at points where this was practicable was a source of economy in the time of carrying the work to completion.

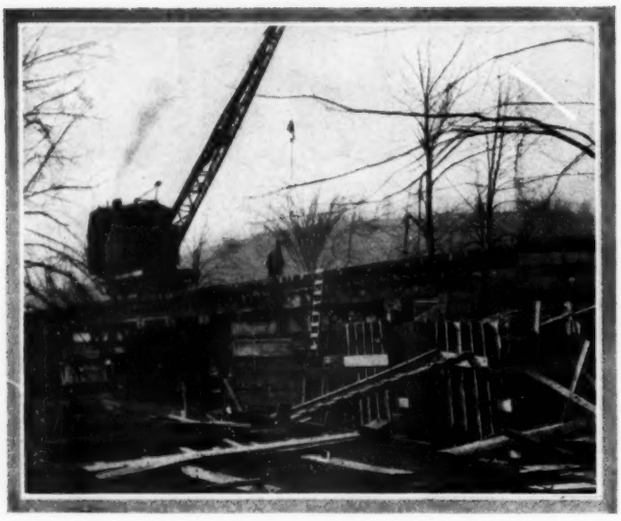
The necessary plans were rushed to completion within a few days and, on November 12, 1929, the contract for the superstructure steelwork was awarded. This steelwork comprised a total of approximately 2,100,000 lb., for all of which is was necessary to prepare general and detail plans, and roll, fabricate and erect the material. This work was rushed to the utmost.

Substructure plans were also pushed to completion and bids were obtained. A contract for a portion of this masonry was awarded on November 5, 1929, and for the remainder, on November 19. This substructure work involved a total of about 10,000 cu. yd. of concrete in 21 piers and 21 abutments.

Handicapped by Adverse Weather

Undertaken in the late autumn with the intention of prosecuting it to completion at the earliest possible date, the work was subject to some seasonal handicaps due to weather conditions. The past winter in the territory concerned was characterized by storms of unusual violence, low temperatures and recurrent high water at various points. The difficulty of obtaining satisfactory concrete in extreme cold weather is too well known to merit discussion here, and only by the most minute care on the part of the field organization was it possible to carry the work forward.

The procedure in proportioning and mixing concrete was directed along lines designed to obtain a high-early-strength concrete. To that end, the mixers were provided with water gages, the consistency was vigilantly observed and controlled, and test specimens were taken at regular and frequent intervals during the progress of the work. The mixing water was heated before use



Work on Substructure of Plate Girder Bridge to Replace Timber Trestle

and artificial heat was applied to the concrete in the mixers and in the forms. The concrete mix, in some cases, was heated by blast torches supplied by the contractors, which forced heated air into the mixers. In other cases, the same result was attained by the use of steam pipes and an auxiliary boiler.

While the substructure work was in every case pushed to conclusion with a rapidity that was surprising in view of the magnitude and nature of the difficulties to be surmounted, special mention may be made of the four-span plate-girder bridge at Shinnston, W. Va. The new substructure of this bridge consists of two abutments and three piers, which contain a total of approximately 1,000 cu. yd. of concrete, and was included in the contract let on November 5. Work on this substructure was commenced on November 7 and was completed on December 26, 1929.

Shipment of the steelwork for the superstructure was commenced early in January, 1930, and erection began immediately thereafter. The delivery and erection of the steelwork were so synchronized with the completion of the various substructure units as to insure continuous and uninterrupted progress, to obtain the maximum working efficiency from forces and equipment, and to minimize idle periods. At two points new concrete arches were built.

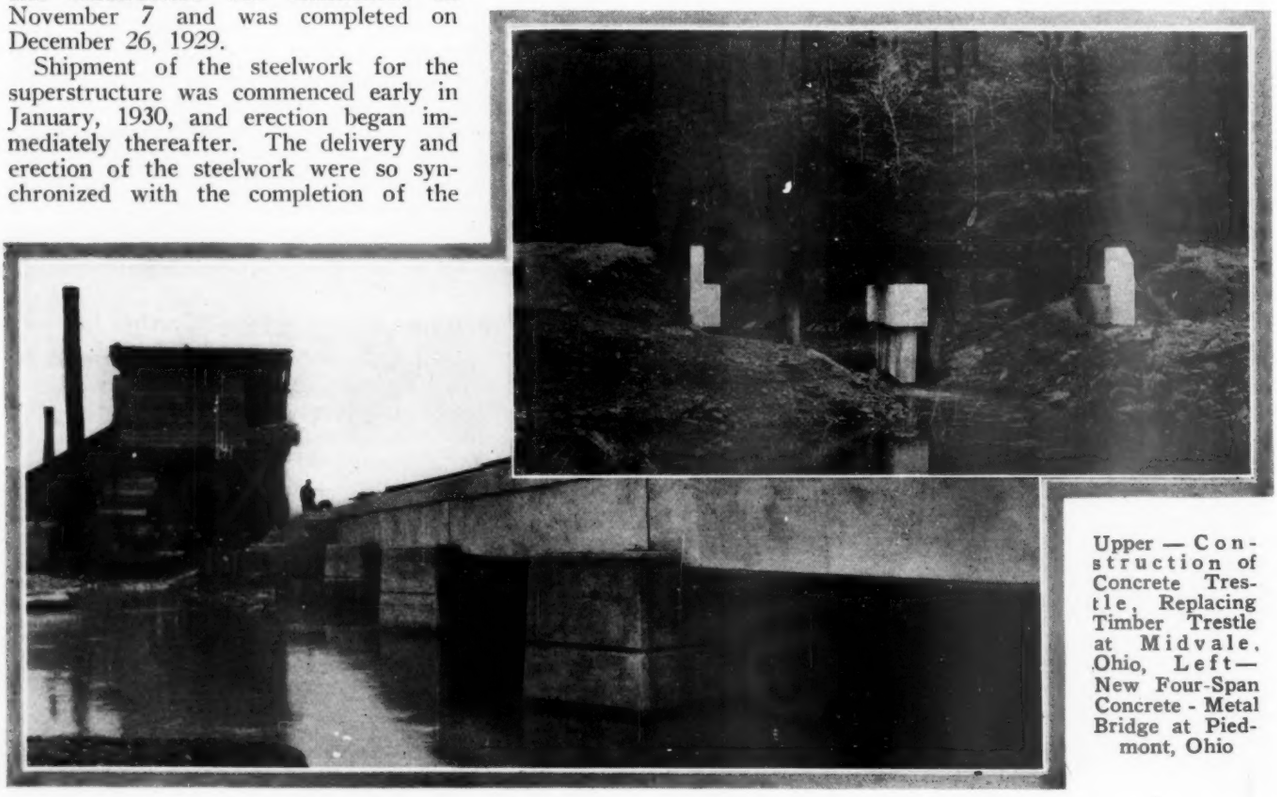
Company Forces Also Utilized

While the work was handled by contract at the larger bridges, where new substructure units and the erection of long, heavy spans were necessary, the railroad company's forces were utilized to the utmost on such portions of this work as they could handle to advantage Their work included the substitution of pipes and fill for bridge structure at eight points, the construction of three reinforced concrete trestles and the installation of helper bents at 28 bridges where such temporary expedients were adopted with the intention of ultimate renewal. The individual parts of the concrete pile trestle built on this line were fabricated at the railroad's plant at Washington, Ind., shipped to the respective bridge sites and erected by the maintenance-of-way forces.

In the prosecution of all phases of the field work, the maximum quantity of equipment which could be used to advantage was placed on the work and the forces were double-shifted to work 16 to 20 hours per day. As the working period was thus extended into the hours of darkness, special arrangements were made for artificial illumination. In the majority of cases the necessary artificial light was supplied by acetylene torches, although electric lights were used wherever power was available.

As the turntables previously available in this territory were not of adequate capacity or dimensions to handle satisfactorily the types of engines which it was proposed to operate therein, the project, in addition to the bridges, involved the installation of 115-ft., three-point-

(*Continued on page 544*)



Upper — Construction of Concrete Trestle, Replacing Timber Trestle at Midvale, Ohio, Left— New Four-Span Concrete - Metal Bridge at Piedmont, Ohio

What Shall We Tell Them?

Should railroad careers be recommended to college men?

By A College Graduate

WHETHER a railroad career offers the college graduate an opportunity for advancement equal to that offered in other fields has been discussed at more or less frequent intervals on the editorial pages and in the correspondence columns of the *Railway Age*. Of necessity, this has been an academic presentation although the very fact that the expressions appear in this journal gives the articles an important place in a more practical discussion of the topic.

During the past several years the author of this article has been called upon, in the absence of its director, to assume charge of a seminar which is part of a course in labor economics of one of our largest and most important universities. With thirty years of railroad service behind him, he has on these occasions presented to the students the phases of labor economics and industrial relations that are unique to the railroad field. Important among these are; grading by seniority, the dual system of pay in train and engine service, the labor features of the Transportation Act of 1920, etc., etc.

Following the author's presentation there is a group discussion. Invariably, in the course of this discussion the question is raised whether, in view of seniority and other practices in railroading, it is desirable that college graduates seek employment in the railroad field. The necessity for answering this question and the responsibility which one must feel for honestly answering it unprejudiced by pride in his profession, presents the problem in an extremely practical form. To do justice to the young people who have faith in his opinion, the author has given much thought to the matter.

Clerical Work

Students enrolled in this seminar are not from the technical colleges but are largely from the college of commerce, some of them majoring in transportation. The fact of their enrollment in this seminar shows a live interest in labor economics or industrial relations. If they sought railroad employment these young men would, according to their own statements, seek white collar jobs. In other words, they would of necessity have to start their railroad careers in the clerical branches. In so doing they would find themselves from the very outset in competition with high school graduates and others who have perhaps not even had this type of schooling. Generally speaking, those with whom they came into competition would have had four or more years start in their chosen field. It is true that the college man would have to his advantage those things which arise out of a university training but under the present system of railroad clerical effort, where routine and precedent are so important, it is extremely questionable whether it could be considered an equal battle for advancement. This is purely a speculative assumption but the important thing is that the high school lad has the advantage of four years seniority and so long as these two are in competition for advancement the college man will never be able to overcome this handicap.

There is, however, a means by which the handicap imposed by seniority regulations may be removed and that is through the medium of positions exempt from advancement by seniority. In virtually every case, exempted positions require a knowledge of stenography and it is questionable whether even exempted positions point the high road to rapid advancement.

A phase of the matter that must be carefully considered by anyone hoping to engage in a successful railroad career through commencing in the clerical branches is that the clerical function is not one of the fundamentally important functions of railroading. While a considerable part of the revenue dollar is expended in clerical effort, this is in a large degree occasioned by the requirements of regulatory bodies, and while other clerical work is justified by the results it is not a primary function of the business as in banks, insurance companies, and similar institutions.

Because clerical effort is such an essential part of insurance, banking, etc., one may learn the business while performing it, but with the exception of a few departments this is not true of railroading. In the accounting and traffic departments the clerical function is one intimately connected with the technique underlying the department's work, but this is not so in many other departments. As an instance, a man might hold every clerical position in the motive power or engineering departments and still know nothing about how to design or repair a locomotive or how to build or maintain a railroad. To summarize; ability required in positions connected with the more practical phases of railroading is not acquired through experience in filling positions whose function is purely clerical.

College Men in Railroad Operation

Railroading as it is viewed by the group in which the students in the seminar belong is reflected in the operating department. If they were in the professional colleges, typical railroading would be thought of by them as reflected by the departments into which the professions for which they were preparing themselves would take them. The student in the college of commerce, if he considered entering upon a railroad career through other than a white-collar gateway, would hope to do so through the operating department. This must be borne in mind in answering the question as to the desirability of railroading as a career. In the absence of a better way in which to answer it, the number of college men who have obtained official rank in the operating department must be used as the measure of desirability.

There are virtually no college graduates among the operating officials of railroads serving the territory in which this university is located. There is one road which is outstanding as a railroad property because of its size and importance; its operating department is officered by a vice-president, a general manager, three

assistant general managers, two assistants to the general manager and thirteen division superintendents. Of these twenty officers but one, the general manager, is a college man and he advanced in the service primarily through the engineering branch. A similar situation exists as to the operating department of other railroads in this part of the country. Applying to this problem the "case system," now so freely availed of in scholastic work, the following is found with regard to graduates of this university:

Case 1—A student majoring in transportation, following graduation completed the transportation course at Harvard Graduate School. Returning here, because he was unable to secure a better one he accepted a position as a clerk in a shop office. He found reasonably rapid advancement blocked and learned stenography so as to secure an exempt position, in this case, as secretary to an assistant division superintendent. This assistant superintendent was one of the few college graduates in the operating department of this railroad. With a change in this position the subject of this illustration had to accept the only position to which his seniority entitled him, a minor clerkship in a suburban station. After approximately five years in railroad service he is convinced that the opportunity for advancement is remote and is seeking employment elsewhere.

Case 2—Another student majoring in transportation in this university, following graduation completed the graduate course in transportation at Harvard. During his undergraduate years he worked mornings and evenings as a gateman in interurban service and during summer vacation periods in both his undergraduate and graduate years worked as a brakeman in main line freight service establishing seniority in this service. Upon completion of his post-graduate work at Harvard he returned here and resumed his work as a brakeman. With apparently no immediate opportunity for advancement, he secured, on the basis of his college record, a research position with one of the large manufacturing companies and his outlook for early advancement and ultimate success is good.

Case 3—The subject of this example followed the same course as the preceding one, including resumption of his position as a freight brakeman upon the completion of his graduate course in transportation at Harvard. He left train service for promotion to the position of transportation inspector and from this position was promoted to one in the mail traffic department.

The foregoing examples refer to recent cases and are cited to assist students in charting their careers. It is to be further borne in mind that these students are interested in the situation only as it refers to their part of the country, which happens to be that in which the pioneer days of railroading are more recent than in most parts of the United States.

Within the past year at a Younger Men in Railroading Conference there were addresses by a railroad president, a superintendent of motive power and an assistant general manager. Each emphasized the fact that he had no scholastic background when he entered railroading and the impression one carried away from this meeting as reflected by these men's addresses was that scholastic education was a hindrance rather than a help in attaining official status. That this was the impression created in the minds of the several hundred young men who composed the conference was indicated by the questioning of many of them at its close.

The Technical Departments

Although, as stated, they are not in the professional colleges, students in the seminar asked whether opportunities for advancement in railroading were greater in the technical branches than in the operating department. This question offers the opportunity for a more optimistic reply. The reasons are that, generally speaking, seniority in service as a measure of advancement does not exist among technical employees, but there does exist these limiting features: Advancement for the professional engineer in railroading is almost entirely within his profession; that is, a mechanical engineering graduate entering railroad service as a draftsman or in the testing department or some similar technical position follows the logical course of advancement until ultimately he becomes the chief mechanical engineer but it is not probable that he will ever be a general superintendent of motive power or other chief motive power officer. This is likewise true of the electrical engineering graduate. It is true that the engineering graduate may accept a special apprenticeship and then by advancement through foremanship, shop superintendency, etc., reach his ultimate goal.

Contrast with the foregoing the opportunities offered to technical graduates by other lines of industry. The communication companies, public utilities and the large electrical and mechanical manufacturing concerns make it unnecessary for the desirable technical graduate to even apply for a position. They send their employment men to the colleges to secure those whom they believe to be desirable additions to their technical and research departments. As a typical case, a young man creditably completed his course in chemical engineering in a western university. Prior to graduation a scout for a company known for its leadership in chemical research offered him a position in its laboratories. Because it did not offer the opportunity of carrying on the kind of work the student wished to do he refused the offer. Several months later he received a telegram from this company offering him a position which would permit him to do the kind of work he wished to do. Anticipating his acceptance, the telegram stated that the vacancy would be held open for him for several months and the starting salary would be $250 per month. While this may in some respects be an extreme example it reflects the general attitude of these companies toward the college men they think would make desirable additions to their personnel. One who has observed how railroads recruit their technical staff can not but compare their methods with those of other industries.

What Shall We Tell Them?

The author realizes that this article will bring forth much comment, largely critical in its nature. He believes it will be said that he is upsetting the traditions of railroading; that he has lost sight of the fact that railroading is "the career open to merit." To the contrary, the author has the greatest admiration for the men who, by their labor, skill and industry, have won for themselves the admiration and respect not only of railroad men but of all Americans; and while doing this have created the science of railroading and made American railroads the world's finest. It would be simpler to tell these inquiring students how, through their own efforts, men have advanced from the most humble beginnings to executives of great railroad systems, but would this be fair to the students? They need this information in order to determine whether they can, with the greatest profit to themselves, enter railroading as a career. As a matter of common honesty we must give them an answer unbiased by any love we may have for our life's work or any pride we may feel of what has been, and is being, accomplished by the men who have made American railroads what they are today. What should we tell them?

N. Y. Central Maintains Efficiency

In face of traffic decline, improves locomotive and fuel performance—1929 a good, not record, year

THE New York Central, in its enlarged aspect, as lessee of its more important subsidiaries (the Indiana Harbor Belt and the Pittsburgh & Lake Erie alone of the N. Y. C. Lines being excluded), in the first six months of the current year had total operating revenues of $248,697,298, a decline of 14.2 per cent from the same period in 1929 (figures for last year being the combined totals of the New York Central R. R., the Cincinnati Northern, the Big Four and the Michigan Central). Operating expenses for the first six months of 1930 totaled $194,237,415, a reduction of 9.8 per cent. Net from railway operation and net railway operating income totaled $54,459,883 and $32,160,278, being reductions respectively, of 26.8 and 37.1 per cent as compared with the first six months of 1929. These figures, while not encouraging, are of course only the reflection of the current business depression—and the New York Central is so conservatively financed that the result, however disappointing, is not in the least embarrassing.

The New York Central earned $16.88 per share of common stock (on which an $8 dividend is paid) in 1929 and $13.15 per share in the year ended June, 1930, so that dividends are well protected in spite of the severe depression in traffic. Operating revenues and expenses of the first six months of the current year as compared with the same period of 1930 are given in Table I. It is of particular interest to note that, while maintenance of equipment expenses have been reduced in almost exact proportion to the reduction in gross revenues, maintenance of way expenses have declined but 7.6 per cent. The system, quite apparently, is not upholding its net revenues by any sacrifice in its physical standards.

Table I—New York Central Lines (Excluding I. H. B. and P. & L. E.)

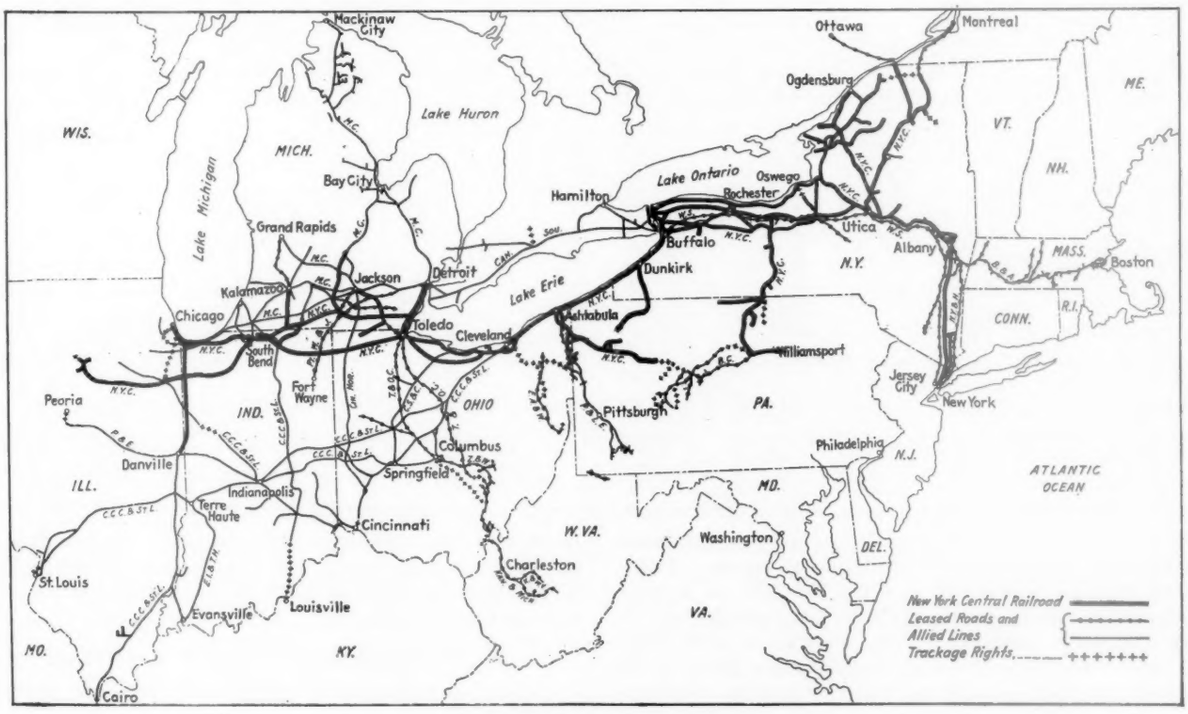
REVENUES AND EXPENSES, SIX MONTHS

	1930	1929 *	Per Cent Change + or —
	11477	11413	
Operating Revenues			
Freight	$160,694,204	$190,161,566	— 15.5
Passenger	57,208,010	63,843,722	— 10.4
Total	248,697,298	289,673,105	— 14.2
Operating Expenses			
Maintenance of Way	31,302,316	33,864,357	— 7.6
Maintenance of Equipment	55,227,817	64,437,350	— 14.3
Transportation	90,336,706	100,146,521	— 9.8
Total	194,237,415	215,256,347	— 9.8
Net from Railway Operations	54,459,883	74,416,758	— 26.8
Net Railway Operating Income	32,160,278	51,089,733	— 37.1

* Combined figures for N. Y. C. R. R., Cin. Nor., C. C. C. & St. L., and M. C.

Train-Hour Decline Greater Than That of Ton-Miles

Cumulative freight service operating statistics for the three principal parts of the unified system—the New York Central R. R., the Big Four and the Michigan Central—for the first five months of 1930, as compared with the same period of 1929 are shown in Table II. The figures provide an interesting note on the possibilities of counteracting traffic declines by improved operating efficiency. The New York Central R. R., it will be seen, countered a reduction of 8.8 per cent in net ton-miles with a 9.4 per cent reduction in locomotive-miles and of 11 per cent in freight train-hours;



The New York Central Lines

an increase of 2.6 per cent in net ton-miles per train-hour; and a 4.4 per cent reduction in fuel consumption per 1000 gross ton-miles. The Michigan Central, with the very heavy decrease of 19.2 per cent in net ton-miles (explained no doubt by its great dependence on the automotive industry and allied activities in Southern Michigan), nevertheless decreased its train-hours 23.9 per cent, increased its net ton-miles per train hour and improved its fuel efficiency. The Big Four had a decrease of 11.1 per cent in net ton-miles, but decreased its freight train-hours by an even larger percentage, and likewise showed improvement in its net ton-miles per train-hour and in fuel efficiency.

Table II—Comparison of Selected Freight Operating Statistics—First Five Months

	N. Y. C. R. R.				M. C.				Big 4			
	1930	1929	Per cent of change Inc.	Dec.	1930	1929	Per cent of change Inc.	Dec.	1930	1929	Per cent of change Inc.	Dec.
Mileage operated	6,468	6,467	0.2		1,856	1,822	1.9		2,715	2,371	14.5	
Gross ton-miles (thousands)	22,325,303	24,491,934		8.9	4,813,890	5,934,174		18.9	7,582,497	8,437,274		10.1
Net ton-miles (thousands)	9,301,157	10,194,522		8.8	1,627,533	2,014,954		19.2	3,414,715	3,840,244		11.1
Freight train-miles (thousands)	9,701	10,465		7.3	2,497	3,018		17.3	3,887	4,187		7.2
Freight locomotive-miles (thousands)	11,439	12,620		9.4	2,581	3,159		18.3	4,129	4,466		7.5
Freight car-miles (thousands)	599,420	661,184		9.3	140,380	175,346		20.0	193,629	213,662		9.4
Freight train-hours	700,852	787,772		11.0	142,462	187,111		23.9	265,579	309,914		14.3
Car-miles per day	28.7	31.1		7.7	24.3	32.1		24.3	27.3	31.4		13.1
Net tons per loaded car	25.6	25.2	1.6		19.3	18.6	3.8		29.4	29.6		0.7
Per cent loaded to total car-miles	60.6	61.1		0.8	60.1	61.9		2.9	59.9	60.6		1.2
Net ton-miles per car-day	445	479		7.1	281	369		23.8	481	565		14.9
Freight cars per train	62.8	64.2		2.2	57.2	59.1		3.2	50.8	52.0		2.3
Gross tons per train	2,301	2,340		1.7	1,928	1,966		1.9	1,951	2,015		3.2
Net tons per train	959	974		1.5	652	668		2.4	878	917		4.3
Train speed, miles per train-hour	13.8	13.3	3.8		17.5	16.1	8.7		14.6	13.5	8.2	
Gross ton-miles per train-hour	31,855	31,090	2.5		33,791	31,715	6.5		28,551	27,225	4.9	
Net ton-miles per train-hour	13,271	12,941	2.6		11,424	10,769	6.1		12,858	12,391	3.8	
Lb. coal per 1,000 gross ton-miles	108	113		4.4	114	115		0.9	121	122		0.8
Loco.-miles per loco.-day	56.3	63.2		10.9	75.5	87.1		13.3	60.0	61.7		2.8
Per cent freight locos. unserviceable	23.6	28.6		17.5	20.5	17.5	17.2		30.8	26.9	14.5	
Per cent freight cars unserviceable	4.4	5.1		13.7	4.3	5.3		18.9	4.2	4.7		10.6

Extra Dividends from Subsidiaries in 1929

The New York Central Railroad in 1929 had operating revenues of $396,917,258, an increase of more than $15,000,000 over the preceding year, notwithstanding the business recession which set in during the last few months of the year. Net railway operating income, $64,624,663, was some 2½ millions in excess of that of 1928, and net income totaled $78,277,291, an increase of almost 28 millions over 1928, largely attributable to extra dividends received on the company's stock holdings in the Michigan Central, the Chicago River & Indiana and the Indiana Harbor Belt. Earnings per share of capital stock outstanding averaged $16.88, which may be compared with an actual dividend disbursement of $8 per share. The result was a large increase in the surplus carried to profit and loss—$40,995,811 in 1929 as compared with $15,303,754 in 1928. The company's corporate surplus at the end of 1929 stood at $298,253,205, equivalent to $64.31 per share of common stock then outstanding.

A remarkable feature of the New York Central's operations has been its ability to hold its passenger business. Its earnings from this source, as well as its total of passengers carried one mile, were increased in 1929 as compared with 1928, although there was some decline by comparison with 1926 and 1927. Local and interline business fell off in 1929, but not alarmingly so when compared with the experience of some roads, and suburban traffic increased.

At the end of 1929 the company had outstanding capital liabilities as follows: Stock (including premiums thereon) $468,589,476 (42.18 per cent of the total); funded debt, $642,286,404. Stock offered to shareholders during January, 1930, brought the total almost to the limit authorized, and the limit was raised from $500,000,000 to $700,000,000 at the annual meeting held during that month.

Table III—New York Central Railroad Operating Results, Selected Items, 1921 to 1928

			Including operating results of Boston & Albany and Ohio Central Lines						
	1922	1923	1923	1924	1925	1926	1927	1928	1929
Mileage	5,710	5,700	6,890	6,920	6,931	6,928	6,906	6,911	6,915
Total operating revenues	$316,620,098	$365,175,188	$421,034,784	$369,606,930	$385,994,505	$399,537,749	$383,377,311	$381,733,244	$396,917,259
Total operating expenses	250,400,470	278,602,021	325,917,241	279,970,163	290,440,958	298,931,038	293,399,836	288,250,203	302,614,246
Net operating revenues	66,219,628	86,573,167	95,117,543	89,636,767	95,553,546	100,606,711	89,977,474	93,483,041	94,303,012
Taxes	17,361,160	20,053,594	22,656,867	23,289,540	25,343,923	26,881,808	25,193,779	29,136,903	27,626,062
Railway operating income	48,805,052	66,421,414	72,355,699	66,167,887	69,992,348	73,557,823	64,677,578	64,215,593	66,577,601
Equipment rents, net Dr.	1,233,223	4,126,180	4,482,667	4,602,564	5079,852	4,693,333	5,831,379	5,082,960	5,096,158
Joint facility rents, net Cr.	2,999,716	3,520,566	3,116,069	3,069,751	3,008,054	3,294,002	2,977,628	3,089,488	3,143,220
Net railway operating income	50,751,544	65,815,799	70,989,101	64,635,074	67,920,550	72,158,492	61,823,827	62,222,121	64,624,664
Dividend income	10,309,803	14,464,455	14,911,850	14,388,778	15,318,325	18,224,255	31,260,564	19,604,392	41,174,838
Total non-operating income	19,051,274	25,317,305	24,668,309	24,123,217	25,419,095	29,076,690	42,608,679	34,594,740	59,146,953
Gross income	69,951,089	91,343,388	95,867,694	88,921,304	93,430,020	101,257,458	104,477,551	96,851,438	123,764,427
Interest on funded debt	34,855,173	33,881,249	33,881,249	34,191,311	28,684,284	29,268,397	29,292,539	27,744,694	26,497,380
Total deductions from gross income	49,315,903	46,003,961	50,528,267	49,670,904	44,802,796	45,593,417	45,912,405	46,516,953	45,487,136
Net income	20,635,186	45,339,427	45,339,427	39,250,400	48,627,224	55,664,041	58,565,145	50,334,485	78,277,292
Dividends	12,876,985	17,432,978	17,432,978	20,728,835	26,732,833	26,827,815	30,462,783	34,854,879	37,090,532
Income balance	7,643,871	27,748,778	27,748,778	18,399,461	21,768,273	28,691,047	27,942,658	15,303,754	40,995,811
Rev. ton miles (thousands)	17,648,981	22,764,912	26,321,575	21,095,678	22,463,487	23,634,239	22,300,002	22,201,886	23,028,153
Rev. passenger miles (thousands)	2,572,565	2,758,223	3,193,533	3,122,308	3,168,122	3,279,968	3,273,593	3,220,754	3,245,068
Rev. per ton mile (cents)	1.122	1.035	1.040	1.077	1.069	1.051	1.051	1.057	1.052
Operating ratio	79.09	76.29	77.41	75.75	75.24	74.82	76.53	75.51	....

M. C. Earnings Over $100 per Share

Operating revenues of the Michigan Central totaled $94,718,967, a figure exceeded only in 1926 and 1923. Net operating revenue totaled $29,853,572. The oper-

ating ratio was 68.48 and net after charges reached a total of $19,335,115, a figure exceeded only in 1928 and then but slightly. Net income for the year was equivalent to $103.20 per share of capital stock outstanding. After the payment of the regular dividends of 40 per cent, $11,840,554 was carried to profit and loss (the extra dividend of 100 per cent, totaling $18,736,400, being appropriated from the surplus in this account). The total corporate surplus of the company at the end of the year totaled $94,089,049, which may be compared with total stock capitalization of $18,736,400, an uncapitalized surplus which easily explains the company's high earnings per share of stock.

The Big Four in 1929 had operating revenues of $91,981,899 which were exceeded only in 1925 and 1926. The operating ratio was 75.69. Net income after fixed charges totaled $9,215,988, equivalent, after payment of preferred dividends, to $18.53 per share of common stock. Dividends on common are at the rate of $8 per share—totaling in 1929, $3,762,304—and the surplus carried to profit and loss totaled $4,899,767. The corporate surplus at the end of the year totaled $66,901,040, which compares with total stock capitalization—preferred and common—of $57,035,284.

The net increase in investment in road and equipment of the New York Central Railroad in 1929 totaled almost 52 million dollars of which slightly less than half was for equipment. The net increase in investment of the Michigan Central was $2,896,517 and of the Big Four, $8,883,664.

Steady, Heavy Capital Expenditures

The New York Central has under way a number of capital improvements of major importance, the greatest of which is the so-called West Side Improvement in New York City, involving electrification and the removal of the company's freight tracks in Manhattan Island from street level to an elevated or depressed private right-of-way. Other important projects include further development of "air rights" in the Grand Central Zone (including provision for the mammoth new Waldorf-Astoria Hotel), the elimination of grade crossings at Syracuse, N. Y., and continued progress on four tracking those portions of the Hudson division, between New York and Albany, which now have but two main tracks. The completion of the new terminal at Buffalo, N. Y., last year has been followed this year by the placing in operation of the Cleveland Union Terminal (in which the New York Central is largely interested). Equipment placed in service last year included 150 Mohawk type freight locomotives and 48 Hudson type passenger locomotives, with 25 of the former and 35 of the latter and 42 electric and 37 oil-battery-electric locomotives ordered for 1930 delivery; 53 passenger train cars; 275 express refrigerator cars; and 4039 freight train cars (19 passenger train cars and 1146 freight train cars being ordered in 1929 for delivery this year). Two large warehouses for the servicing and storage of automobiles were completed during the year.

On the Michigan Central plans were initiated for the development of extensive "air rights" along the lake front in Chicago. On the Big Four probably the largest project completed during the year was the double-tracking and grade reduction program involving 48 miles of line on the Sandusky division. Eleven miles of second main track, with automatic signals, between Hart, Ind., and Mounds were completed and work progressed on 22 miles of second main track construction between Colfax, Ind., and Whitestone and of two smaller projects of like nature.

The now closely-knit New York Central, after a relatively prosperous 1929, has given clear evidence of its strength under the less favorable conditions of the present year. With its extensive program of improvements, it gives clear promise of its ability to continue its progress in providing still more efficiently for the transportation requirements of its patrons and its territory, even if industrial development should yield a considerable increase in traffic.

Michigan Central—Comparative Traffic and Revenue Statistics

Year ended Dec. 31	Mileage	Revenue tons	Revenue ton-miles (thousands)	Average haul	Revenue per ton-mile, cents	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1920.....	1,866	20,203,776	4,824,740	160	1.144	$87,790,799	$77,140,559	$10,630,240	87.87	$3,805,785
1921.....	1,862	20,471,263	3,127,686	153	1.462	72,911,852	52,551,945	20,359,908	72.08	7,725,337
1922.....	1,862	25,261,826	3,852,216	152	1.446	83,426,407	59,576,357	23,850,050	71.41	12,818,271
1923.....	1,863	32,323,248	4,863,930	150	1.319	94,798,042	67,639,532	27,158,510	71.35	14,176,448
1924.....	1,862	29,273,172	4,265,934	146	1.370	87,614,662	62,139,524	25,455,138	70.95	13,627,534
1925.....	1,871	33,936,772	4,500,781	139	1.437	91,864,377	61,893,039	29,971,338	67.37	18,806,194
1926.....	1,855	33,181,573	4,527,068	136	1.425	95,524,343	64,957,364	30,566,979	68.00	18,963,899
1927.....	1,858	31,415,851	4,282,486	131	1.409	89,750,602	62,244,288	27,506,314	69.35	16,866,558
1928.....	1,858	32,100,897	4,522,458	136	1.417	93,217,493	62,643,935	30,573,558	67.20	19,389,419
1929.....	1,858	32,792,343	4,563,484	135	1.413	94,718,967	64,865,395	29,853,572	68.48	19,335,115

Cleveland, Cincinnati, Chicago & St. Louis, Operating Results, Selected Items, 1920-1929

Year ended Dec. 31	Mileage	Revenue tons	Revenue ton-miles (thousands)	Average haul	Revenue per ton-mile, cents	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1920.....	2,421	38,513,685	6,874,262	179	.0885	$88,862,078	$74,635,269	$14,226,809	83.09	$5,888,779
1921.....	2,411	30,043,632	5,318,082	177	1.058	79,793,593	64,406,122	15,387,471	80.70	2,929,949
1922.....	2,409	35,828,091	6,589,758	184	.0935	84,665,690	64,858,314	19,807,377	76.61	7,528,837
1923.....	2,408	44,856,746	7,961,882	178	.872	94,941,444	72,114,741	22,826,703	75.96	11,617,354
1924.....	2,398	43,072,973	7,618,966	177	.0841	87,712,381	66,740,728	20,971,654	76.09	8,080,932
1925.....	2,391	45,387,869	8,180,273	180	.0834	92,061,069	67,001,481	25,059,588	72.78	11,407,525
1926.....	2,397	46,754,875	8,515,679	182	.0826	94,539,987	70,058,665	24,481,322	74.10	11,395,283
1927.....	2,397	45,595,841	8,413,288	185	.0808	91,185,737	70,322,699	20,863,038	77.12	8,775,382
1928.....	2,397	44,820,712	8,125,385	181	.0832	88,830,152	66,989,155	21,840,998	75.41	8,819,823
1929.....	2,399	45,945,308	8,375,176	182	.0831	91,981,899	69,624,283	22,357,617	75.69	9,215,988

THE CEYLON GOVERNMENT RAILWAY has imported American seals for use in sealing freight cases, according to an article in the Ceylon Daily News. The railway has been subject to a large number of petty thefts which it is hoped the new type of seals will reduce. The seal which has been in use could be twisted open, and after the theft, replaced in such a manner that the theft was seldom discovered until the case was opened at its destination and the contents checked. It was stated that if the new seals prove effective they will be used to replace the old type entirely.

Equipment Painting Section Meets at Chicago

WITH a total registration of approximately 360 members, guests and railway supply men, the ninth annual meeting of the Equipment Painting Section, Mechanical Division, American Railway Association, opened a three-day session at the Congress hotel, Chicago, on September 9. This year's meeting also marks the sixtieth anniversary of the organization of the former Master Car and Locomotive Painters' Association which was founded at Boston, Mass., in 1870. The first day's session was called to order by Chairman Marceau Thierry, foreman painter of the Norfolk & Western, and was taken up principally with the general business of the section together with a presentation of a report on Shop Construction and Equipment and an address by John Waterbury, illuminating engineer of the Benjamin Electric Company, dealing with the proper methods of illuminating railway paint shops.

The Present Railway Situation

One of the principal addresses during the convention was that of Samuel O. Dunn, editor, *Railway Age*, at the second day's session. Mr. Dunn, in discussing the effects of the present business depression on railway operation and earnings, said in part: "The railway situation in this country during the present business depression is widely different from what it was in 1921, the year of our last serious depression, or than it ever was prior to this year. The railways are not only suffering from loss of business due to the present depression, but to other influences and conditions to which, in their entire history, they never were subject until within recent years. Owing to these new influences and conditions, railway officers and employees are worrying about whether, after the present depression passes, the railways will have enough traffic. Until within recent years railway managers were always concerned about whether they would be able to provide enough facilities to handle future traffic, not about whether they would have enough traffic to handle.

"Owing to large expenditures within recent years upon the improvement and maintenance of railway properties, they were in unprecedentedly good condition when the present depression began. In the hope that the depression would be short, railway managers continued for some months to make liberal capital and maintenance expenditures. The decline in car loadings of freight steadily increased, however, from 6 per cent in January to 17 per cent in August, and the decline in total earnings became so large that within recent months most railways have adopted policies of sharp retrenchment. This cannot continue long without deterioration of railway service. At the same time, the railways cannot be criticised for retrenching when the decline in their own traffic shows that most industrial and commercial concerns, and the peoples themselves, are similarly retrenching, and when, unless they effected every possible economy, many railways would not earn the interest on their bonds.

"The necessity of largely reducing expenses has thrown many employees out of work. The number of railway employees in June was 1,564,269. This was 172,000 less than in June, 1929, and 217,500 less than the average for June during the last five years. This reduction of employees, and the accompanying reduction of railway purchases, are, of course, contributing their share toward preventing a revival of business. The railways cannot contribute much toward a revival of business when their own business is so bad that, in spite of all the economies made, the average percentage of return being earned on their investment is the smallest since 1921.

"While the immediate railway situation is due largely to the business depression, it is also due largely to other causes that were in operation before the depression began. The passenger earnings of the railways this year will be about $525,000,000 less than in 1920, but most of this decline occurred prior to the depression and is due to the competition of motor vehicles on highways. Their freight business increased only one-fourth as much annually during the nine years ending with 1929 as in the preceding ten years, and this was largely due to the competition of steamships through the Panama canal, inland waterways, and motor trucks. It is the irony of fate that, at the end of a decade in which there has been an enormous decline in railway passenger business, and relatively much the smallest increase in railway freight business that has occurred, in the one hundred years of their history, the government should be carrying out a program of extensive development of inland waterways for the purpose of 'relieving' the railways.

"The railways have today a huge investment, the making of which has provided facilities for handling a much larger traffic, both passenger and freight, than they have ever handled, for handling it more economically per unit of traffic, if they can get enough traffic, and for rendering better service than ever before. Meantime, means of transportation by water and highway that are largely subsidized and unregulated by the government are diverting increasing amounts of traffic from them, and it is principally owing to this diversion of traffic that year after year the number of employees of the railways has been declining and that they have been finding it increasingly difficult to approach the 'fair return' which the laws under which they are regulated have assured them.

"The railways heretofore have largely offset the adverse external influences to which they have become so subject within recent years by rapidly increasing the efficiency and economy of their operation. They could effectively meet the competition of all other means of transportation and get enough traffic if other means of transportation were not financially aided by the government, as the railways are not, and were regulated by the government, as the railways are.

"How long will railway employees and the public continue to accept government policies which constantly reduce employment on the railways, which prevent the railways from earning adequate returns in good years and compel such severe retrenchment in poor years, and which, from the standpoint of the public, are without economic justification, because they involve taxing the public to help provide transportation service that is more expensive including the taxes paid, than service by rail?"

Other Reports

Other reports that were presented and discussed during the progress of the meetings were those of the "Committee on Tests;" "Committee on the Maintenance and Care of Paint and Varnish at Terminals;" "Ornamentation of Cars and Locomotives;" "Equipment Painting Practices;" and "New Developments in Equipment Painting with Economies Involved."

I. C. C. Valuation Methods

WASHINGTON, D. C.

METHODS being used by the Bureau of Valuation of the Interstate Commerce Commission in its work of bringing railway valuations up to date for recapture purposes in an effort to meet the objection made by the Supreme Court to the methods used in the O'Fallon case are outlined to some extent and defended in a brief submitted by attorneys for the bureau in the case involving the ascertainment of the excess income of the Duluth, Missabe & Northern.

The brief makes no mention of the "formula" which some of the roads claim is being used by the commission's valuation organization for giving "fifty-fifty" weight to cost of reproduction less depreciation and estimated probable original cost reduced in proportion to depreciation. In fact it says that the standard for determining value for rate-making purposes is still that enunciated by Justice Hughes in the Minnesota rate case in which he said "it is not a matter of formulas." The decision of the Supreme Court in the O'Fallon case is said to be "instructive on the point of determining the method of finding value only insofar as it tends to show, in holding that the commission failed to comply with the mandate of Congress, what the commission should not do." "This," the brief says, "is the only significance of the O'Fallon decision. So far as it affects the problem of methods to be used in valuation, it created no new law. The provisions of Section 15a and 19a of the act clearly indicate the intention of Congress that the commission should be the fact-finding body in valuation cases. Only Congress and the commission itself have the power to determine the methods of finding value. The Supreme Court has repeatedly refused to interfere with the valuation process before the commission."

In the determination of value, the brief asserts, the commission may exercise a "reasonable judgment" by giving "due consideration" to all elements of value and "all relevant facts."

Under the head of original cost the brief says the commission had been unable to ascertain definitely the original cost to date of all common carrier property but that such details as it was possible to ascertain were stated in the final valuation and that the accounting section of the bureau had made an analysis of the information contained in the report, together with additional information relating to additions, betterments and retirements. As a result it had prepared a statement on original cost of the common-carrier property owned and used as of the day preceding each recapture period, in part estimated on the basis of cost of reproduction new at the 1914 level of prices. It is stated that the original cost figures for property other than land "have been reduced in the same ratio that the cost of reproduction less depreciation bears to the cost of reproduction new for such property, as reported by the engineering section of the bureau."

It is also stated that the Bureau of Valuation contends that the cost of reproduction new should be determined by the application of prices prevailing over a number of years sufficient to establish a reasonable and proper level of prices to be applied to the inventories for the various years covered by the inquiry and that the recapture engineering report represents a fair estimate of the cost to reproduce the property of the carrier, except land, for each year therein shown.

"It reflects the best judgment of a group of highly trained and efficient engineers, based upon their experiences and their studies of the costs of railroad construction . . . Careful analyses of these data by the various experts have resulted in a determination of what were considered to be fair normal prices to be applied to a particular kind of property at any given time. No effort has been made to develop a tabulation of prices to be applied to any and all railroads in a theoretical reproduction. Prices have been developed which will produce precisely the same kind and character of property that exists on a railroad that is to be reproduced. It is the judgment of the Bureau of Valuation that prices prevailing prior to and subsequent to any particular year, as well as the prices prevailing during that year, should be given consideration in the determination of a reproduction estimate. The reproduction estimates which have been determined as proper to reproduce this carrier give effect to prices prevailing over a reasonable period and are what may be termed period prices. The bureau does not believe that estimates may be relied upon by the application of prices current in each and every year . . . The application of yearly prices, frequently referred to as 'spot prices,' does not find approval in utility commission decisions or court decisions . . . In this case it was not necessary to make a forecast as to the 'probable future values.' It was not necessary to make a prophecy as to the 'future general price level of commodities, labor, and money.' The plateau of prices prevailing during the years covered by this inquiry had been established by the Bureau of Valuation and is reflected in the reproduction estimates found in the engineering report. The plateau of prices established by the bureau covers a 'reasonable period.'"

Car Retarders Reduce Cost of Yard Operation on the C. & O.

(Continued from page 518)

40 per cent, arrives during the first trick, these cars can all be classified quickly and forwarded without delay, whereas, under the old system continued operation of the hump was necessary to handle the total day's receipt, and as a result cars were delayed longer in the receiving yard. With the retarder system, 1,252 cars were classified and 1,093 loads forwarded during the first trick, 8 a.m. to 4 p.m. on July 3, 20 min. of this time being allowed for lunch.

On Monday, when the receipt of coal is light on account of the mines being closed on Sunday, the old hump is not operated, all cars being classified in the car retarder yard. This alone saves a full trick for a yard force and a locomotive.

In order to make a comparison of operating costs under the two methods, a study was made of two comparable days. The best day's operation on record for the period when car riders were used was October 8, 1927, when 2,724 cars were classified. On February 1 of this year, with the retarders in service, practically the same number of cars, 2,792 were classified, while at the same time a reduction in operating expenses was effected at the rate of $200,000 annually, which represents a return of about 40 per cent on the investment in the retarder installation over and above interest and depreciation. Figuring the savings on an average of 2,750 cars daily, the yard operating costs have been reduced from 43 to 18 cents per car.

Western Roads Petition for Grain Case Reconsideration

WASHINGTON, D. C.

ASSERTING that the requirements of the rate-making provisions in Section 15a of the interstate commerce act impose upon the Interstate Commerce Commission the duty to take steps to increase railway revenues rather than reduce them, the western railways have filed with the commission a petition requesting it to set aside its order of July 1 prescribing a general revision of western grain rates and to grant a rehearing and reconsideration of the issues. Pointing out that they have never received the fair return contemplated by the law, the roads express the belief that the readjustments required by the order will reduce their revenues by approximately $20,000,00 a year, and take the position that, in the face of earnings constituting considerably less than a fair return, the general trend of rate readjustments must be upward rather than downward.

The petition squarely challenges the policy of the commission, first indicated in the general rate reduction of 1922, and followed on several occasions since, of ordering reductions in rates upon a group of commodities moving in heavy volume, while the fair return provisions of the law have not yet been complied with.

The roads ask an opportunity to bring the evidence down to date and to apprise the commission of the present situation with respect to carrier revenue.

"The carriers in the western district are not now earning and for years past have not earned the fair return provided by law," the petition says. "The order complained of will further substantially reduce their net income. The low rate level thus imposed manifests the commission's failure to fulfill the affirmative duty placed upon it by the provisions of section 15a (2) and further manifests its failure to employ the usual tests of the reasonableness of rates applied by the commission when it but recently found in two decisions that the existing general level of rates on grain and grain products was not unreasonable."

In support of the request the petition makes these points:

"The order requires rates that will substantially reduce the revenues of your petitioners in the face of a general rate level which at present is and for years past has been insufficient to provide for a fair return.

"In entering the order herein the commission has failed to comply with the affirmative duty, imposed upon it by the provisions of Section 15a, to provide for a fair return.

"The order becomes operative at a time so long subsequent to the closing of the record that the present conditions with respect to carrier revenue are not reflected by the facts which were in evidence before the commission.

"The order requires rates on grain and grain products at a level substantially below that which was twice recently approved by the commission and there is no finding with respect to changed conditions in justification of the repudiation of its former decisions.

"While the findings are said to be under the provisions of the interstate commerce act the commission appears to have been influenced to a great extent by the Hoch-Smith resolution as previously construed by it.

"The general level of the rates is made so low that the proportional rates for equalization purposes are shown by the report itself to be wholly indefensible.

"The order requires the transportation of grain products at the reduced wheat rates while the record shows without dispute that grain products not only are of higher value but that their cost of transportation is considerably in excess of the cost of transporting wheat.

"Combinations of flat rates to the primary markets and proportional rates beyond, applicable to other than continuous shipments, necessarily are unreasonably low if the components thereof result from breaking on the market points a one-factor through rate alleged to have first been determined upon a reasonable basis.

"The requirement that there shall be two free stops in transit, plus one inspection, on a general level of rates as low as required is without justification.

"The order is made without evidence to support it or upon evidence which does not support it.

"The order deprives your petitioners of their property without due process of law and takes from your petitioners their private property for public use without just compensation, in violation of the fifth amendment of the Constitution of the United States."

The carriers contend that the determination of proper relationships in the rates on grain and grain products from producing to consuming territories and as between the various markets and ports would have taken care of the real interest that each complainant had in this case, without any reduction in the general level of such rates. "But few complainants sought a general reduction and the most emphatic of these was not sufficiently optimistic to anticipate such a blow to carrier revenue as the commission delivered by the order entered herein," the petition says.

"The questions of net income and fair return should have been of paramount importance in reaching a decision in this investigation. Grain and grain products constitute a substantial part of the tonnage of the carriers in the western district and any appreciable reduction in the rates on these commodities would have a substantial revenue effect. Moreover, the application of the provisions of Section 15a (2) to a proper determination of the issues in a case of such wide scope as the present proceeding is expressly recognized. Your petitioners respectfully represent that they have never received the fair return upon their railroad property to which they are by law entitled. The commission apparently concludes and your petitioners submit the fact to be that their net income is and for some years has been considerably less than is required.

"Furthermore, the reductions in revenue from the order in this case come at a time when the effects of subsidized competition from waterways, trucks, etc., and the losses in passenger traffic, are felt to a greater extent than ever before. The distribution of automobiles by means other than rail transportation is increasing. Moreover, the carriers are facing the loss of a substantial tonnage because of the substitution of natural gas for coal, as fuel, and because of the use of the pipe lines for the distribution of gasoline. This is no time for the downward revision of rates on a group of commodities that move in such substantial volume as do grain and grain products."

Referring to the statement by Commissioner Woodlock that the rates will involve a reduction of at least $15,000,000 in the revenues of the western carriers, the petition expresses the belief that the revenue losses resulting from the readjustment will more nearly approximate $20,000,000.

The petition includes an extensive legal argument to show that the provisions of Section 15a "are more than a bare recognition of the right of the carriers to earn a fair return," and that they "impose upon the commission

the affirmative duty to preserve and protect that right, for that is the means, specified by Congress, of securing the maintenance of adequate service."

In the view of petitioners these points of law are not overcome simply by the commission's willingness to consider, when presented by the carriers, proposals for increases in rates on certain commodities, or by the fact that other portions of the rate structure investigation are still pending. They take the position that the continuing requirement of the statute therefore binds the commission to take steps which will increase revenues rather than reduce them.

The argument continues:

After stating that the reductions far exceed the increases and the corresponding revenue effects will be substantial, but without reference to the existing shortage in income or the inadequacy of the earnings in previous years, the commission appears to feel its action is neverthless justified because it says it is satisfied "that the readjustment will not threaten the maintenance of an adequate system of transportation." This is a misconception of the commission's obligation.

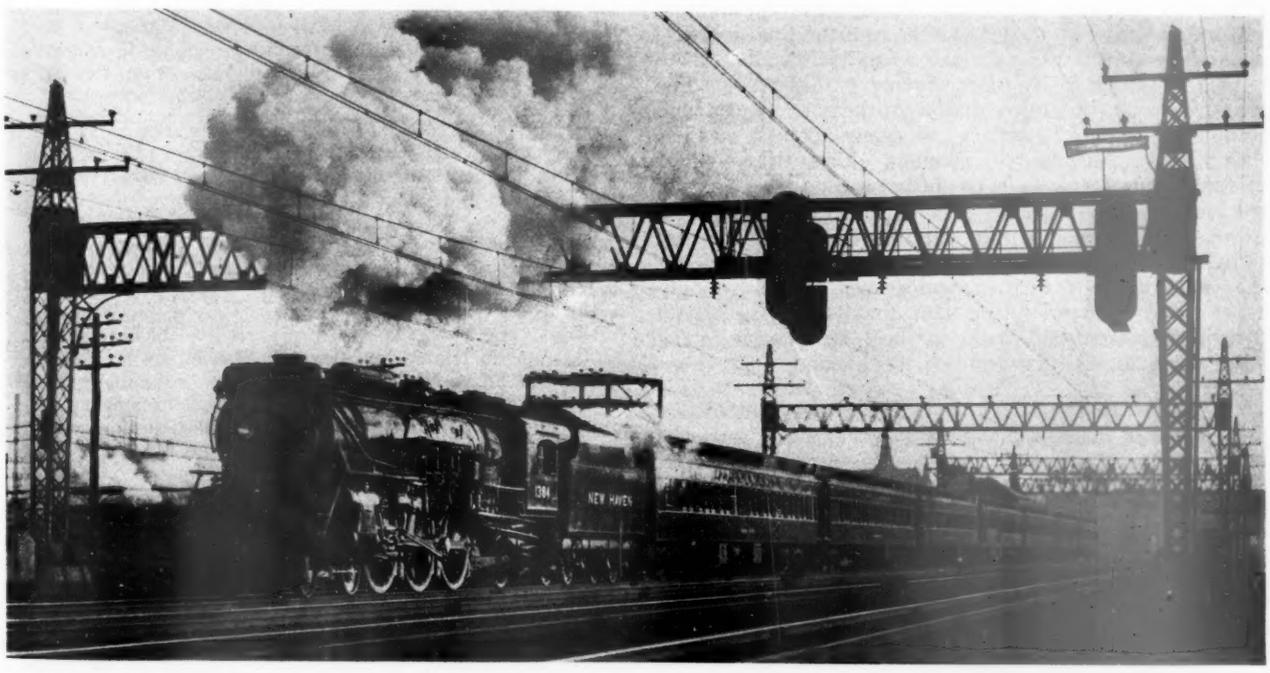
Congress declared its purpose in passing the transportation act. That purpose was to secure a maintenance of an adequate transportation service. But the Congress also specifically prescribed the means by which this object is to be attained. There can be no mistake on this point. The Supreme Court has held in the cases heretofore mentioned that there is expressly imposed upon the commission by section 15a (2) the affirmative duty to provide for a fair return. By this means to an end, Congress has declared the commission shall proceed. It is not for the commission to say that while Congress has prescribed the means to secure adequate service, the commission may disregard that injunction if it believes it can accomplish the same result by pursuing a different policy. In this respect the commission is given no discretion to substitute its judgment for that of Congress.

The transportation act established the fair return as an inseparable accompaniment to the maintenance of an adequate system of transportation. Apparently the commission has sought to separate the two, thus substituting an uncertain and fluctuating standard of what is necessary to insure adequate service. It is respectfully submitted that this goes beyond the power of the commission.

The commission states, as indicated above, that the precise effect upon revenues can not be determined without a test and suggests that a trial of the new rates be made indicating that, if the result proves disastrous, application may be made for relief from the requirements of the order. The investigation of which this proceeding is a part was instituted pursuant to the so-called Hoch-Smith resolution. Much evidence was introduced bearing upon the alleged depression in agriculture. The commission finds that while conditions affecting the grain farmer had been improving within a few years immediately preceding the hearing, there is still depression in the grain industry. Just shortly before this case was decided, however, the United States Supreme Court handed down its decision in the California fruit case, decided June 2, 1930. That decision overturned the commission's interpretation of the Hoch-Smith resolution and held among other things that existing rates which were not unreasonable or unlawful under the interstate commerce act were not to be condemned because of the Hoch-Smith resolution and particularly the third paragraph thereof. The commission accordingly states that the findings in this case are under the provisions of the interestate commerce act. It seems apparent, however, that its decision has been influenced to a great extent by the terms of the Hoch-Smith resolution, as previously construed by it . . .

Your petitioners have attempted to point out what, as they believe, is the inherent fallacy in the interpretation of the law which the commission apparently continues to entertain. Congress, in section 15a, laid an affirmative duty upon the commission to adjust rates in such a manner that the carriers would secure a fair return. This was not done primarily for the carriers, although they are participants in the benefits from the plan, but for the protection of the public against a failure of the transportation system to function properly at all times. The commission in Increased Rates, 1920, . . . recognized and accepted this important duty, and endeavored to fulfill it. Later in Revenues in Western District, 113 I. C. C. 3, 37, 38, the commission, without expressly reversing what it said in the earlier decision, apparently repudiated this obligation and indicated the view that its function was that of reviewing proposals brought before it by the carriers. The carriers did have before it at that time a proposal for an increase in rates, which took the form, in general, of a flat 5 per cent advance, but the commission indicated it would not grant such an increase except in case of an emergency. In passing, it may be remarked that there is no provision in the act indicating that the commission's affirmative duty is limited to periods of emergency. The purpose of the act, obviously, is to avoid emergencies.

* * * *



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The New York, New Haven & Hartford's "Yankee Clipper" Eastbound Out of New Haven, Conn.

Two-Car Units for Lackawanna Electrification

(Continued from page 526)

ing Company and the brake equipment by the Westinghouse Air Brake Company.

The trailers are made from steel equipment which has been used in steam service. They are taken from service, a few at a time, and sent to the plant of the American Car & Foundry Company, Berwick, Pa., where they are fitted with vestibules similar to those on the motor cars, the steam heating apparatus is replaced with electric heaters and control equipment is installed.

All of the work of building and equipping the cars is being done under the direction of C. J. Scudder, superintendent of motive power and equipment, and E. M. Jenkins, master car builder. Specifications, inspection, and other engineering work in connection with the electrical equipment is being done by Jackson and Moreland, engineers, of Boston, Mass.

B. & O. Reconstructs 63 Bridges

(Continued from page 534)

support turntables at five places. The pits and substructures for these turntables, comprising about 2,600 cu. yd. of concrete, were constructed by company forces, who also installed the turntables after their delivery.

Incident to this work, 20 timber trestles, comprising a total length of about 1,700 lin. ft., were replaced with permanent structures. Bridge rating was actually raised an average of 20 per cent on a total of 290 miles of line and an additional 56 miles was indirectly affected by the project. As the work on each section was brought to a conclusion, the rating on that territory was immediately raised. The first bridge rating increase was authorized February 18, 1930, and the final increase was made March 24.

Due to the necessity of improving grades on this line as incident to the introduction of heavier power and equipment, it was necessary, at several points, to raise the track materially. Prosecuted during the winter months and performed in 128 working days under extremely adverse weather conditions, the completion of this project well within the limited period assigned signalizes a distinct triumph of up-to-date practice over the vicissitudes of weather and season. It also establishes beyond question the fact that it is possible to carry on construction operations successfully at any period of the year which exigency may demand.

THE CUBAN IMPORT TARIFF on United States box cars has been increased to 28 per cent ad valorem, plus a surtax of three per cent duty, instead of the present rate of 25 per cent, according to reports received by the Department of Commerce.

A PROPOSAL to make the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo the model railroads of China was tendered to the Chinese Ministry of Railways by Liu Wei-tse, managing director of the two lines, recently, according to a report to the Department of Commerce. The scheme provides among other things, for rebuilding the stations at Nanking and Shanghai, modernizing platforms of stations, improvement of third and fourth class coaches, and purchases of additional locomotives and cars.

Looking Backward

Fifty Years Ago

Steel rails are a little variable, and it is said that some sales have been made as low as $58 per ton at mill, while $65 is reported paid for early delivery. New York quotations are $60 to $63 per ton. Iron rails are quiet, with little new business of importance. Quotations are $46 to $47 per ton at mill for 56-lb. sections, and $48 to $50 for light rails.—*Railroad Gazette,* September 10, 1880.

The Cincinnati Southern [now part of the Southern] recently reduced passenger rates from 5 cents to 2 cents per mile, and is selling round trip tickets from Chattanooga, Tenn., to Cincinnati, Ohio, and return, 670 miles, for $6. Stimulated by this action the Louisville & Nashville has reduced round trip tickets to Louisville, Ky., to 2 cents per mile for the next 60 days, with a promise of a reduction of regular rates after that time to 3 cents per mile—*Railway Age,* September 16, 1880.

The committee on rail of the International Roadmasters' Association presented a report at its convention at Chicago on September 9 in which it was concluded that an increase in the weight of rail from 60 lb. to 80 lb. per yard would increase the wearing quality by 100 per cent, while the increased cost would not be more than 33 per cent. The committee on curves recommended that the limit of super-elevation should be 5 in., that the proper elevation at the tangent point of a full elevation should be three-fourths of an inch, and that a full elevation for a speed of 35 m. p. h. should be three-fourths of an inch for each degree of curvature.—*Railway Age,* September 17, 1880.

Twenty-Five Years Ago

James Kurn, trainmaster on the Atchison, Topeka & Santa Fe at Las Vegas, N. M., has been appointed division superintendent at San Marcial, N. M. J. F. Lehane, general freight agent of the St. Louis Southwestern, has been appointed general passenger agent. E. E. Bashford has been appointed assistant purchasing agent of the National of Mexico. R. E. Dougherty has been appointed resident engineer in charge of construction in the exterior zone of the New York Central at New York.—*Railway Age,* September 15, 1905.

The acquisition of control of the Southern Pacific by Union Pacific interests and the subsequent placing of unexpected restrictions on the interchange of traffic with the Denver & Rio Grande between its lines and California points, coupled with the increase of commerce with the Philippines, China and Japan led the D. & R. G. to assist in the promotion of the plans for the construction of the Western Pacific. The president of the Rio Grande, in his annual report, also states that the control of the Western Pacific, including about 38 miles of railway in operation, has been transferred to the former company. A main line for the Western Pacific has been located through the Sierra Nevada mountains with a maximum gradient of 1 per cent, while 85-lb. rail will be used throughout. The construction is now a certainty and its completion within the next three years is confidently anticipated.—*Railway Age,* September 15, 1905.

Ten Years Ago

The Association of Railway Executives, meeting at Chicago on September 3, voted to establish an emergency rate of 5 cents per mile to be paid to railroads which handle empty cars on the order of either the Commission on Car Service or the Interstate Commerce Commission. The name of the Commission on Car Service was changed to Car Service Division of the American Railway Association to obviate confusion arising from the use of the word commission.—*Railway Age,* September 10, 1920.

New Books

Patents, Trade-Marks and Copyrights—Law and Practice, by Oscar A. Geier. 128 pages, 8¾ in. by 5¾ in. Bound in cloth. Published by Richards & Geier, patent and trade mark attorneys, New York. Apply.

This book which now appears in revised form as a fifth edition of the original work is intended primarily as an aid to patent lawyers, manufacturers, merchants and inventors interested in the technique of obtaining and renewing patents, trademarks and copyrights. It is a concise outline of United States and foreign laws and procedure methods in these matters with a convenient topical arrangement which makes it an easily-consulted reference book well suited to serve its stated purpose.

Railways of South America, Part III: Chile, by W. Rodney Long. Illustrated. 373 pages, 9 in. by 5½ in. Bound in cloth. Published by the Bureau of Foreign and Domestic Commerce, United States Department of Commerce. Price $1.30.

This treatise on Chilean railways is the fifth in a series of recent reports on Latin American railroads which reports are part of the Department of Commerce "Trade Promotion Series." It presents detailed information with respect to all the railways of Chile, covering such phases as the development, mileage, operating officers, methods of purchase, finance, traffic statistics, characteristics of right-of-way, number of employees, motive power, rolling stock, repair shops and equipment, as well as an analysis of the railway supply market. Numerous illustrations and detailed diagrams of Chilean railway facilities are interspersed throughout and combine with the text to present a dispassionate and up-to-date survey of railway conditions in this important South American republic.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Five Years of Research in Industry, 1926-1930, compiled by Clarence J. West. A bibliography of selected articles from the technical press on industrial research, presenting a cross-section of important research activities covering a wide range of industries. Pub. by National Research Council, New York City. 50 cents.

Morgan the Magnificent—The Life of J. Pierpont Morgan (1837-1913), by John K. Winkler. Unindexed. Chapters relating to railroads are VI "Railroad Lunacy"; VII "Gentlemen's Agreements . . . "; VIII "Re-Morganizing the Railroads"; X "Hill and Harriman"; XI "Northern Pacific Panic . . . "; XIII "Roosevelt Versus Morgan—Northern Securities Suit." 313 p. Pub. by Vanguard Press, New York City. $3.50.

National Motor Truck Analysis. "Analysis of returns to Truck Questionnaire sent out to Truck Owners nationally on September 18, 1929, by General Motors Truck Company, Pontiac, Michigan." 44 p. Chart. Pub. by General Motors Truck Company, Pontiac, Michigan.

Railroad Map of the United States, prepared under the direction of Chief of Engineers, U. S. Army. Issue of July, 1930. Corrected and revised reprint of the map mentioned in the Booklist of October 1, 1927. 4 sheets, making a wall map about 7 x 4 feet when mounted. Pub. by U. S. Govt. Print. Off., Washington, D. C.

Recent Efforts to Immunize Commission Orders Against Judicial Review, by Kenneth F. Burgess. A paper before the Section of Public Utility Law, American Bar Association. 14 p. Publisher not given but probably available from Author, Chicago, Ill.

Summary of Proceedings, 11th Session, International Railway Congress, Madrid, Spain, 5-15 May 1930. Lists papers published, program of events, lists of delegates, opening ceremonies, program of sectional meetings, summary reports of discussions in session, general meetings, and closing ceremonies. Includes note of social events also. August 1930 issue of Bulletin of the International Railway Congress Association. p. 1759-1916. Pub. by the Association, Brussels, Belgium. $2.40 "not including postage."

That Man Debs and His Life Work, by Floy Ruth Painter. See Chapter I "Career to the End of the Pullman Strike" and Bibliography. "Published under the auspices of the Graduate Council, Indiana University," 209 p. Bloomington, Indiana, Indiana University Graduate Council, $2.19.

Turksib, 1928-1930. A series of illustrated papers on the construction of, the opening of, and the prospects of the Turkestan-Siberian Railway, opened May 1, 1930. "Turksib and Cotton Growing" and the discussion of safeguards against earthquakes may be of particular interest. Includes maps. 64 p. Pub. by The Soviet Union Society for Cultural Relations with Foreign Countries (VOKS), Moscow. *Apply.*

The World Wheat Outlook, 1930 and Facts That Farmers Should Consider. Prepared by the Staff of the Bureau of Agricultural Economics. Includes chart "Wheat Prices after the Civil War" (1865-1915) and "Wheat Prices After the World War" with a large question mark after June, 1930 New York price. U. S. Dept. of Agriculture Miscellaneous Publication No. 95. August 1930. 40 p. Pub. by U. S. Govt. Print. Off., Washington, D. C.

Periodical Articles

Changing Railroads. Editorial comment on how the railroads are adapting themselves to new conditions and "the progressive way in which they are meeting at least part of their problem is an impressive lesson to all." Saturday Evening Post, August 30, 1930, p. 20.

Elmer A. Sperry—An Active Life Devoted to Engineering and Invention. Memorial. "Another of Mr. Sperry's inventions is a device for detecting flaws in steel rails . . . " p. 871. Mechanical Engineering, September 1930, p. 870-871.

John K. Chapman—The Grand Old Man of Railroading, by Freeman H. Hubbard. "On his eighteenth birthday, October 4, 1854, he began braking on a way freight. From that day until this he has been continuously on the Erie's payroll, with the exception of three years' leave of absence during the Civil War." p. 161. Railroad Man's Magazine, September 1930, p. 161-164.

Two Miles a Minute—The Last Survivor of the Fastest Locomotive Run in the World's History Tells of the Thrill, by D. S. McClellan, as told to W. H. Colson. McClellan is Chief Dispatcher, Atlantic Coast Line Railway. "It happened back in March, 1901, on the old Plant System, which is now a part of the Atlantic Coast Line Railway, between Savannah, Georgia, and Jacksonville, Florida . . . . From Screven to Satilla it is five miles, and we were breathless when we saw that the distance was made in exactly two and a half minutes! One hundred and twenty miles an hour!" Railroad Man's Magazine, September 1930, p. 218-220.

Welland Canal Traffic in 1930, by Francis R. Stewart. "Navigation on the Welland Canal this year began on April 21, and marked the bringing into use of the greater part of the new ship canal. The official opening of the latter has been set for September 1, 1930. The total cargo carried on the canal from the opening date to June 30 was 1,703,504 metric tons, as against 1,835,237 tons during the same period of last year, a decrease of 0.72 per cent." Commerce Reports, September 1, 1930, p. 530-531.

Odds and Ends of Railroading

Literary Railroader

P. L. Vradenburg, land appraiser for the Kansas City Southern at Kansas City, Mo., was the winner of the prize of $100 for the best short story submitted in a contest held by the Chicago Daily News.

Train Whistle is a New Experience For Texas Woman

Mrs. Paddy Mires, who has lived on her place two miles southeast of Christoval, Texas, for 54 years, has heard the scream of the panther and the cry of the Indian, but it was only a few days ago that she heard the whistle of a passenger train. She heard this when the first train was run over the Santa Fe's newly-completed line from San Angelo to Sonora.

Any Other Railroaders in the Boxer War?

When on August 15, 1900, the gates of the Sacred City of China were stormed by the allied forces of England, France, Germany, Japan, Austria, Italy and the United States, and entered for the first time by white men, David Burr Hight was one of those to enjoy the distinction. Mr. Hight, who retired from active duty as a Louisville & Nashville switchman on November 1, 1929, was at that time a private in the Fourteenth United States Infantry and was 27 years old. His regiment had been sent to China to help quell the Boxer uprising, immediately following a year's campaign against the Philippine insurrectionists under Aguinaldo.

Century-Old Southern Road Pioneered in Standard Gage

The first railroad in the Mississippi Valley and one of the first railroads in the world to adopt the standard gage was the West Feliciana Railroad, between St. Francisville, La., and Woodville, Miss., now a part of the Illinois Central.

This railroad will soon reach its 100th birthday. It was chartered by the state of Louisiana on March 25, 1831. At that time railroads were in the experimental stage and there was much controversy among railway engineers in England and the United States concerning the most practical gage to adopt. George Stephenson, the inventor of the locomotive, was advocating a gage of 4 ft. 8½ in.; Brunel, another noted engineer, was building a railroad with a 7-ft. gage, the broadest railroad the world has ever known. In the United States there were railroads building and proposed with gages of 4 ft. 9 in., 4 ft. 9¼ in., 4 ft. 10 in., 5 ft. and 5 ft. 6 in. The first Southern railroad, in South Carolina, had a gage of 5 ft.

At the time the West Feliciana Railroad was organized in 1831, there were only two or three short railroads in England of 4 ft. 8½ n. gage and one in the United States—the Baltimore & Ohio, then only a few miles long. It was not until after the Civil war that 4 ft. 8½ in. became the standard gage for steam railroads in the South.

Names on British Locomotives

When James I was made King of England about 1603, he brought with him from Scotland his much admired court jeweler, George Heriot, whom he familiarly nicknamed "Jingling Geordie," a sly reference to his wealth. Now, the London & North Eastern has named a locomotive in honor of George Heriot, who bequeathed the bulk of his fortune to the magistrates and clergy of Edinburgh, Scotland. The locomotive is a superheated "Scott," Class 4-4-0, No. 9421, and was built at Cowlairs in 1914. The name "Jingling Geordie" is painted on its side. There is also a Pacific type locomotive on the same road, No. 2751, called the "Humorist,"—N. Y. C. Magazine.

Railway Talk in North Chinese

The library of the University of Heidelberg, Germany, contains almost everything one could want. Browsing through it, the writer came upon a book translating German railway terms into North Chinese. This being the department for the odd and the bizarre, a few of the terms are given, also translated into English:

English	*German*	*North Chinese*
Track	Bahn	Tha lu
Train	Zug	Xo tsha
Station	Bahnhof	Tsha dsan
Ticket	Fahrkarte	Tsha phiau
Locomotive	Lokomotive	Dji kuan tsha
Signal	Signal	Xau
Switch	Weiche	Ban sou
Collision	Zusammenstosz	Lian ke xoo tsha

* * * *



To Prove That the Eastern Trackmen Wave at Passing Trains, The Pennsylvania Submits the Above, Showing the Golden Arrow in Indiana

NEWS *of the* WEEK



On the Indiana Harbor Belt, near Chicago

THE OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY is offering to the highest bidder its narrow gage North Beach branch, the 28-mile line extending from Megler, Wash., to Nahcotta which is no longer necessary for the service of the public. The property placed on sale includes four locomotives, 14 passenger cars, 33 freight cars, 28 miles of track and right of way and part of the railroad's dock property at Astoria.

Signaling Principles and Practices

H. S. Balliet, secretary of the Signal Section, American Railway Association, has issued the ninth and tenth chapters of the comprehensive work on American Railway Signaling Principles and Practices which the Signal Section is bringing out a chapter at a time. These two are Chapter 12, Semaphore signals, and Chapter 13, Light signals. Each pamphlet costs 25 cents a copy when sold to members and to railroad employees and 35 cents to other persons. Chapter 12 consists of 71 pages and chapter 13 of 38 pages.

Frisco Locomotive Kept in Service 700 Hours

D. L. Forsythe, general road foreman of locomotives on the St. Louis-San Francisco, who in August, 1929, conducted a test of locomotive No. 4113 which engine was run 7,350 miles with a continuous fire, has this year made a similar test with locomotive No. 4213, which was kept in service from August 1, to August 31, during which time it traveled 9,700 miles, or 2,350 miles more than was run in the test last year. Crews were changed 79 times. The engine was run, throughout the month, on freight trains between Kansas City, Mo., and Birmingham, Ala.

Revised Explosive Regulations

The revised regulations for the transportation by rail of explosives and other dangerous articles, including specifications for shipping containers, which were issued by the Interstate Commerce Commission on May 12, last, (in a pamphlet of 381 pages, 8 in. x 11 in.) are to go into effect on October 1. The Bureau of Explosives (30 Vesey Street, New York City) announces that the freight tariff, including the regulations pertaining to freight service only, as issued by the Bureau, is now ready. The complete regulations as prescribed for freight, express and baggage service, together with shipping container specifications, will be published as B. E. pamphlet No. 9, pocket size.

E. J. & E. Seeks Dismissal of Government Suit

A motion to dismiss the suit of the United States Government against the Elgin, Joliet & Eastern was filed in the federal court at Chicago on September 4 by attorneys for the railway. The government seeks a writ of mandamus to compel the railroad to stop transporting in interstate commerce the products of subsidiaries of the United States Steel Corporation, which corporation owns all the capital stock of the Elgin, Joliet & Eastern, claiming that the practice constitutes a violation of the commodities section of the Interstate Commerce act. The motion to dismiss is based on the ground that the government petition does not state a cause for an action in mandamus, and it also says that as mandamus is an action in an equity suit, it should have been filed in a court of equity rather than a court of law.

Dearborn Street Station Hearing at Chicago

Hearings were begun at Chicago on September 9 on the petition of the Chicago & Western Indiana asking the Illinois Commerce Commission for an order permitting the continued operation of the Dearborn Street station, Chicago, with its existing facilities, which is in effect a petition to set aside an order issued by the city commissioner of public works on August 11 directing that the railroad remove its tracks from Plymouth court at Taylor street. The tracks in question provide the railroad with access to the Dearborn station annex, across Plymouth court from the main station.

While the city maintained at the hearing that the state commission had no jurisdiction in a dispute between the railroad and the city over the use of city property, Robert R. Farrell, assistant commissioner, agreed to hear evidence as to the extent of the railroad's need for the tracks to serve the public properly. The city pointed out that the railroad, by an ordinance adopted in 1915, agreed that it would not enter into any court or commission proceedings regarding the use of the streets in the vicinity of the station.

Trainmen Criticize Pipe Line Transportation

Alleged economic abuses resulting from the increasing use of common carrier pipe lines and the relation of the latter to oil transportation by railroads which they replace were discussed in a resolution adopted by the international association of general chairmen of the Brotherhood of Railroad Trainmen in annual convention at Denver, Colo., on August 28.

The resolution pointed out that the railroads pioneered in the field of transportation and contributed largely to the discovery and development of an important natural resource—crude oil—and invested hundreds of thousands of dollars in tank cars and locomotives, new lines, terminals and shops in order to distribute this product to consumers. Many railroad men, the resolution continued, have removed their homes to the oil-producing territory and entire communities have been built and have become dependent upon the continuous operation of these railroad lines as oil carriers. The introduction and operation of pipe line carriers has resulted in the loss of employment to thousands of railroad employees, and unless their further expansion is curbed, will result in the loss of jobs which have been held as a means of sustaining the families of hundreds of additional employees.

The resolution further pointed out that:

"The railroad companies have been a source of revenue to the states and the nation through the medium of taxation upon the property devoted to and the earnings accruing from the transportation of oil, while the taxes paid by the pipe line companies are insignificant in

(*Continued on page 554*)

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Akron, Canton & Youngstown	July	171	$210,656	$110	$218,971	$38,966	$20,103	$14,250	$63,471	$16,092	$152,671	69.7	$66,300	$66,278	$39,915	$95,481
	7 mos.	171	1,668,944	758	1,732,711	281,888	165,920	101,876	482,420	127,596	1,149,903	66.3	582,808	473,637	306,363	694,068
Atchison, Topeka & Santa Fe	July	9,627	14,489,833	2,726,120	18,577,431	2,181,254	2,935,762	407,856	4,662,158	425,977	10,529,408	56.7	8,048,023	6,106,853	6,059,453	6,938,759
	7 mos.	9,630	78,642,571	18,161,053	106,740,635	18,608,976	22,846,496	2,975,142	33,253,383	3,177,609	80,659,055	75.6	26,081,580	17,312,665	16,889,792	30,514,984
Gulf, Colorado & Santa Fe	July	1,960	2,860,244	153,845	3,115,385	201,099	476,780	58,508	727,834	74,046	1,532,961	49.2	1,582,424	1,485,816	1,322,202	839,593
	7 mos.	1,945	12,759,823	984,332	14,597,607	3,216,042	3,295,596	403,860	4,653,448	529,515	12,000,184	82.2	2,597,423	1,922,480	910,840	1,712,009
Panhandle & Santa Fe	July	1,634	1,639,774	86,630	1,810,743	209,342	240,514	20,541	369,608	39,403	875,333	48.3	935,410	918,132	800,854	1,055,024
	7 mos.	1,578	8,169,517	574,224	9,310,096	2,465,392	1,971,378	140,951	2,665,798	280,567	7,449,993	80.0	1,860,103	1,528,512	657,948	2,220,759
Atlanta & West Point	July	93	119,416	38,897	182,999	23,169	36,517	11,557	77,310	13,512	167,070	91.3	15,929	2,546	—9,749	9,660
	7 mos.	93	950,332	290,576	1,433,451	175,588	261,672	84,787	567,443	85,230	1,208,588	84.3	224,863	129,681	41,657	108,069
Western of Alabama	July	133	119,658	40,641	181,064	19,277	41,783	11,679	70,492	14,365	161,748	89.3	19,316	5,672	12,788	21,620
	7 mos.	133	1,089,075	310,066	1,554,333	208,188	316,987	87,282	537,753	92,113	1,270,757	81.7	283,576	180,615	191,682	178,996
Atlanta, Birmingham & Coast	July	639	375,326	18,636	429,233	74,612	78,263	29,567	160,361	20,006	374,490	87.2	54,743	39,482	7,929	50,474
	7 mos.	639	2,047,529	117,880	2,435,354	587,076	541,573	201,804	1,057,962	141,800	2,605,429	106.9	—170,075	—275,770	—404,386	—129,826
Atlantic Coast Line	July	5,157	3,097,451	549,214	4,021,806	784,384	976,093	146,975	1,702,378	168,396	3,806,402	94.6	215,404	—84,968	12,804	16,734
	7 mos.	5,154	28,265,935	7,821,142	39,908,450	5,871,063	7,374,882	1,193,813	13,809,229	1,253,604	29,973,337	75.1	9,935,113	6,493,877	5,774,015	10,433,397
Charleston & Western Carolina	July	342	206,985	8,298	222,736	45,404	33,916	7,293	85,611	7,337	179,563	80.6	43,173	25,668	26,588	28,572
	7 mos.	342	1,578,755	54,683	1,695,354	403,963	260,658	51,484	630,257	50,898	1,397,212	82.4	298,142	162,618	136,561	289,544
Baltimore & Ohio	July	5,658	14,499,883	1,671,139	17,306,765	2,000,709	3,100,042	511,961	5,984,512	683,833	12,455,241	72.0	4,851,524	3,985,098	3,649,079	5,178,947
	7 mos.	5,658	104,160,982	11,236,331	123,751,050	14,434,142	26,498,941	3,768,564	43,544,136	4,849,835	94,370,515	76.3	29,380,535	22,923,010	21,371,934	27,669,787
Baltimore & Ohio Chic. Term.	July	85	.....	.....	317,072	71,959	34,055	2,417	150,205	20,349	282,426	89.1	34,646	—10,574	91,562	151,933
	7 mos.	85	.....	.....	2,273,300	335,277	295,272	17,087	1,194,071	135,143	2,018,483	88.8	254,817	—136,520	639,849	790,591
Staten Island Rapid Transit	July	23	70,623	162,468	243,991	20,517	15,891	2,425	102,926	30,414	172,173	70.6	71,818	54,818	41,021	63,102
	7 mos.	23	461,440	915,525	1,445,923	122,440	118,153	15,090	715,086	122,389	1,093,158	75.6	352,765	230,693	176,011	146,685
Bangor & Aroostook	July	619	261,767	29,140	319,760	124,597	114,031	5,087	119,270	23,134	389,023	121.7	—69,263	—90,808	—70,812	—19,932
	7 mos.	619	4,709,330	377,103	5,303,681	858,954	879,772	41,007	1,231,810	185,796	3,216,514	60.6	2,087,167	1,649,185	1,617,526	1,339,508
Belt Ry. Co. of Chicago	July	57	.....	.....	557,961	35,466	55,696	3,775	262,959	12,495	370,391	66.4	187,570	131,984	157,894	166,063
	7 mos.	57	.....	.....	4,079,379	403,182	438,440	29,626	1,956,070	84,738	2,912,056	71.4	1,167,323	795,458	1,070,615	1,062,381
Bessemer & Lake Erie	July	227	1,972,117	4,865	1,996,581	114,652	345,542	24,928	336,710	35,175	860,247	43.1	1,136,334	986,379	947,224	1,067,276
	7 mos.	227	8,275,366	34,704	8,433,409	880,383	2,325,791	110,747	1,939,128	254,680	5,529,200	65.6	2,904,209	2,441,547	2,428,612	3,876,232
Bingham & Garfield	July	33	25,616	88	26,496	7,299	3,376	1,629	8,946	4,189	25,532	96.4	964	—1,268	15,306	23,432
	7 mos.	33	215,617	88	221,630	39,499	52,244	11,182	59,177	33,937	196,839	88.8	24,791	—13,911	101,115	151,187
Boston & Maine	July	2,090	3,602,613	1,404,233	5,781,004	1,099,276	756,851	96,259	2,083,412	221,060	4,284,683	74.1	1,496,321	1,198,480	1,006,536	1,280,750
	7 mos.	2,090	26,897,368	8,299,416	40,811,023	7,025,693	6,368,273	644,109	14,895,731	1,530,935	30,635,499	75.1	10,175,524	8,236,764	6,770,971	7,578,774
Brooklyn Eastern District Term.	July	11	102,410	.....	104,129	7,992	15,998	617	35,582	5,426	65,615	63.0	38,514	32,117	32,117	34,526
	7 mos.	11	770,629	.....	785,842	63,138	106,037	3,984	256,120	39,503	468,782	59.7	317,060	268,427	268,427	283,558
Buffalo & Susquehanna	July	253	139,864	529	152,975	31,908	38,576	2,318	42,581	7,163	122,546	80.1	30,429	28,354	39,975	10,543
	7 mos.	253	960,363	5,136	1,045,585	206,552	312,079	14,428	308,672	58,988	900,719	86.1	144,866	142,201	230,439	211,439
Buffalo, Rochester & Pittsburgh	July	601	1,158,768	62,745	1,269,443	188,223	325,277	37,445	486,585	43,716	1,083,472	85.4	185,971	155,955	170,309	214,020
	7 mos.	601	8,338,969	398,262	9,045,374	1,143,886	2,477,268	263,194	3,512,454	314,170	7,725,220	85.4	1,320,154	1,059,997	1,161,277	1,707,330
Burlington-Rock Island	July	367	277,705	4,760	289,908	84,498	32,579	7,481	86,427	14,088	210,312	72.5	79,596	71,786	39,697	260,079
	7 mos.	367	1,062,905	33,462	1,151,316	869,997	213,100	45,831	514,251	90,952	1,638,101	142.3	—486,785	—542,899	—737,219	—13,414
Canadian Pacific Lines in Maine	July	233	84,846	27,155	124,651	34,607	36,234	8,172	65,254	4,015	148,282	118.9	—23,631	—38,131	—52,229	—29,787
	7 mos.	233	1,302,422	221,218	1,628,830	373,356	366,758	53,452	686,599	31,149	1,511,314	92.7	117,516	16,016	—127,075	—80,766
Canadian Pacific Lines in Vermont	July	85	68,165	47,127	140,627	18,287	27,508	2,350	84,824	2,356	135,325	96.2	5,302	1,282	—28,970	—17,817
	7 mos.	85	694,061	220,617	1,072,227	193,713	238,069	14,118	628,961	18,608	1,093,415	102.0	—21,188	—49,328	—264,530	—211,142
Central of Georgia	July	1,944	1,391,058	212,304	1,736,724	197,188	287,662	58,043	721,064	79,750	1,351,141	77.8	385,583	281,485	278,084	363,778
	7 mos.	1,944	9,780,829	1,822,433	12,930,589	1,524,561	2,331,932	471,764	5,188,438	583,117	10,192,295	78.8	2,738,294	1,899,493	1,925,805	2,469,139
Central New Jersey	July	692	3,266,166	915,665	4,416,861	415,812	896,414	74,550	1,674,774	127,426	3,214,344	72.8	1,202,517	752,221	639,983	674,357
	7 mos.	692	23,681,104	4,944,860	30,554,566	3,064,970	6,753,547	441,926	11,922,254	929,575	23,298,401	76.3	7,256,165	4,559,083	3,673,214	4,562,563
Central Vermont	July	456	500,888	100,741	669,568	131,861	102,301	20,106	264,325	23,897	544,612	81.3	124,956	109,418	122,365	318,168
	7 mos.	465	3,494,685	595,374	4,543,894	842,228	742,876	129,590	1,925,201	178,905	3,832,707	84.3	711,187	598,825	721,685	1,132,385
Chesapeake & Ohio	July	3,089	10,186,528	469,549	11,133,451	1,521,590	2,196,617	173,172	2,892,591	426,845	7,228,976	64.9	3,904,475	3,078,842	3,119,825	3,568,336
	7 mos.	3,087	72,287,180	3,398,603	79,185,565	11,305,064	16,757,100	1,164,158	20,393,442	2,503,645	52,281,195	66.0	26,904,370	21,124,793	21,445,359	23,147,948
Chicago & Alton	July	1,028	1,615,595	360,892	2,183,633	345,676	405,420	78,657	798,977	57,022	1,699,116	77.8	484,517	370,754	144,263	610,666
	7 mos.	1,028	10,325.258	2,654,115	14,498,763	1,937,879	3,466,460	541,476	5,583,329	477,009	12,128,351	83.7	2,370,412	1,573,940	247,455	2,014,721
Chicago & Eastern Illinois	July	946	1,317,147	198,588	1,652,487	193,301	376,836	81,596	671,848	71,570	1,410,709	85.4	241,778	91,718	—79,529	448,157
	7 mos.	946	9,295,261	1,565,825	11,919,841	1,541,243	2,714,734	573,328	5,019,272	504,977	10,417,090	87.4	1,502,751	598,530	—525,701	1,130,379

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Chicago & Illinois Midland	July	131	$237,935	$3,609	$250,290	$25,628	$43,547	$20,423	$64,110	$25,717	$178,899	71.5	$71,391	$62,884	$56,861	$16,814
	7 mos.	131	1,632,074	35,585	1,735,233	196,506	372,357	146,354	509,174	178,648	1,400,848	80.7	334,385	275,866	243,671	250,666
Chicago & North Western	July	8,458	8,458,175	1,939,787	11,675,084	1,966,083	2,201,581	260,288	4,207,037	393,507	9,093,869	77.9	2,581,215	1,752,209	1,486,374	4,459,020
	7 mos.	8,458	55,529,108	11,841,366	75,876,118	11,169,589	16,007,978	1,607,056	29,698,566	2,700,553	61,406,632	80.9	14,469,486	9,078,352	7,682,158	14,381,950
Chicago, Burlington & Quincy	July	9,325	9,596,957	1,663,308	12,503,071	2,308,007	2,030,333	304,713	3,963,201	373,557	9,091,367	72.7	3,411,704	2,446,397	2,218,182	2,633,575
	7 mos.	9,338	62,022,301	9,218,906	80,150,061	11,663,938	12,344,886	2,201,788	27,564,228	2,616,047	57,114,189	71.3	23,035,872	16,518,929	14,881,405	18,667,923
Chicago Great Western	July	1,495	1,559,149	191,162	1,891,509	340,446	244,921	90,678	708,424	53,390	1,426,979	75.4	464,530	375,033	190,989	350,281
	7 mos.	1,495	10,739,885	1,219,145	12,974,750	1,821,422	1,891,376	601,012	5,263,496	385,620	9,980,823	76.9	2,993,927	2,402,299	1,199,496	1,012,772
Chicago, Indianapolis & Louisville	July	647	977,288	107,666	1,195,632	151,460	253,467	37,039	433,998	36,670	920,047	77.0	275,585	193,553	65,520	210,046
	7 mos.	647	7,110,637	928,767	8,912,389	1,012,915	1,865,826	270,962	3,314,991	257,802	6,796,885	76.3	2,115,504	1,554,271	699,527	1,391,415
Chicago, Mil., St. Paul & Pacific	July	11,335	9,715,457	1,219,178	12,212,556	2,250,099	2,251,711	359,301	4,379,186	363,224	9,575,349	78.4	2,637,207	1,808,670	1,401,638	2,405,606
	7 mos.	11,300	66,091,016	7,621,705	82,073,729	13,681,797	16,962,588	2,343,790	31,640,985	2,674,541	67,497,522	82.2	14,576,207	8,924,735	6,361,045	13,033,170
Chicago River & Indiana	July	20	.....	.....	493,005	43,000	35,000	1,735	170,076	19,357	269,168	54.6	223,837	204,246	273,693	280,724
	7 mos.	20	.....	.....	3,633,608	341,000	328,600	9,482	1,304,212	129,974	2,113,268	58.2	1,520,340	1,276,064	1,779,139	2,047,742
Chicago, Rock Island & Pacific	July	7,592	8,601,072	1,200,457	10,731,038	1,543,607	1,553,374	265,258	3,647,067	334,373	7,402,559	69.0	3,328,479	2,705,369	2,221,817	2,557,351
	7 mos.	7,592	53,865,825	8,988,065	69,576,151	9,198,225	13,092,460	1,749,325	26,217,137	2,431,481	53,277,694	76.6	16,298,457	12,390,646	9,211,668	10,171,243
Chicago, Rock Island & Gulf	July	566	750,301	52,764	855,323	54,491	48,236	22,630	230,797	20,993	379,405	44.4	475,918	428,343	382,431	312,856
	7 mos.	566	3,396,256	418,819	4,134,298	565,965	389,143	152,764	1,418,871	151,750	2,681,292	64.9	1,453,006	1,286,728	1,005,827	1,360,846
Chic., St. Paul, Minn. & Omaha	July	1,746	1,597,396	317,442	2,105,816	358,083	414,379	40,495	840,477	89,173	1,749,757	83.1	356,059	246,626	172,108	462,013
	7 mos.	1,746	11,102,039	1,945,880	14,203,181	2,082,108	2,805,977	291,705	6,085,034	598,973	11,931,902	84.0	2,271,279	1,523,939	1,012,488	1,456,587
Clinchfield	July	309	445,938	8,795	465,196	60,552	100,082	21,268	107,609	17,671	307,234	66.0	157,962	87,955	125,903	144,818
	7 mos.	309	3,489,645	70,114	3,630,408	427,953	908,639	151,701	790,647	123,831	2,402,086	66.2	1,228,322	738,233	1,164,268	1,448,369
Colorado & Southern	July	1,038	636,946	94,607	804,104	130,818	165,883	16,755	299,353	39,677	658,226	81.9	145,878	75,653	49,588	—30,069
	7 mos.	1,038	4,783,143	469,948	5,788,141	915,650	1,160,667	116,591	2,121,681	299,058	4,631,652	80.0	1,156,489	665,923	513,397	469,063
Ft. Worth & Denver City	July	696	947,137	124,497	1,130,368	98,554	127,405	23,573	265,015	36,844	553,193	48.9	577,175	489,076	469,801	714,422
	7 mos.	696	4,611,962	779,367	5,814,517	814,097	1,063,078	149,507	1,831,013	275,679	4,140,030	71.2	1,674,487	1,349,146	1,252,234	1,842,547
Wichita Valley	July	270	47,691	1,969	53,277	27,361	5,327	.....	26,817	1,846	61,258	115.0	—7,981	—14,890	—32,648	27,279
	7 mos.	271	436,478	20,649	490,216	176,264	41,249	164	206,337	11,292	431,556	88.0	58,660	9,111	—124,838	105,221
Columbus & Greenville	July	167	99,073	10,750	116,350	35,822	17,542	3,645	40,616	11,580	108,854	93.6	7,496	3,496	2,243	4,988
	7 mos.	167	799,190	94,354	950,272	234,338	139,223	28,870	338,187	82,637	820,590	86.4	129,682	100,242	83,168	58,478
Conemaugh & Black Lick	July	20	70,524	.....	110,984	16,841	17,625	212	58,113	3,520	96,311	86.8	14,673	13,673	17,440	51,566
	7 mos.	20	512,816	.....	941,673	87,760	156,729	6,468	543,111	26,151	820,219	87.1	121,454	114,454	134,510	209,211
Delaware & Hudson	July	881	2,516,371	314,522	3,050,613	436,081	715,015	64,037	1,059,840	155,201	2,442,304	80.1	608,309	484,997	486,030	593,228
	7 mos.	881	18,666,284	1,563,251	21,696,536	3,143,405	5,254,652	414,377	7,976,361	1,138,056	17,972,198	82.8	3,724,338	2,862,171	2,825,330	3,945,814
Delaware, Lackawanna & Western	July	998	4,208,996	964,212	5,894,024	632,364	944,912	147,441	2,355,402	177,190	4,303,291	73.0	1,590,733	1,055,676	1,080,963	1,302,520
	7 mos.	998	29,673,494	5,956,678	40,809,827	4,076,965	7,677,720	1,035,938	16,937,407	1,244,302	31,259,688	76.6	9,550,139	6,092,414	6,106,222	9,187,914
Denver & Rio Grande Western	July	2,561	1,751,278	355,245	2,310,996	300,652	453,106	62,668	731,004	89,038	1,672,533	72.4	638,463	471,465	516,580	642,439
	7 mos.	2,561	13,186,588	1,546,947	15,967,566	2,215,106	3,373,245	413,783	4,990,203	638,444	11,776,156	73.8	4,191,410	2,978,289	3,172,675	4,111,880
Denver & Salt Lake	July	232	178,562	12,678	207,782	93,056	53,416	2,169	39,155	11,402	196,966	94.8	10,816	—6,194	4,817	92,451
	7 mos.	232	1,379,554	98,898	1,587,337	383,327	417,765	16,701	286,139	115,071	1,206,875	76.0	380,462	273,360	333,766	610,395
Detroit & Mackinac	July	242	86,740	8,931	105,205	38,558	14,710	1,859	34,986	2,257	88,082	83.7	17,123	8,553	7,107	40,869
	7 mos.	255	526,398	54,562	640,328	169,969	128,904	15,515	248,882	52,424	591,766	92.4	48,562	—244	—1,342	196,109
Detroit & Toledo Shore Line	July	50	219,612	.....	223,317	47,438	26,345	7,891	65,932	7,685	155,300	69.5	68,017	54,047	10,895	20,342
	7 mos.	50	2,355,496	.....	2,388,014	270,426	235,118	54,552	604,631	86,814	1,251,401	52.4	1,136,613	953,195	501,476	640,872
Detroit Terminal	July	19	.....	.....	91,242	26,025	9,453	.....	51,021	4,037	90,536	99.2	706	—13,348	—11,689	59,510
	7 mos.	19	.....	.....	898,019	123,605	89,000	49	459,904	32,926	705,484	78.6	192,535	83,634	90,037	481,411
Detroit, Toledo & Ironton	July	496	545,640	1,984	568,107	97,008	97,547	11,273	208,993	35,074	449,310	79.1	118,797	65,169	51,370	550,045
	7 mos.	502	6,995,422	11,873	7,130,372	925,475	771,635	94,481	1,807,839	246,674	3,839,622	53.8	3,290,750	2,845,094	2,581,996	3,243,892
Duluth, Missabe & Northern	July	568	3,356,410	7,758	3,811,830	324,491	285,089	3,529	527,751	40,466	1,180,852	31.0	2,630,978	2,344,043	2,345,249	2,992,328
	7 mos.	567	10,253,470	45,626	11,657,716	1,814,569	2,168,314	29,271	2,419,914	311,382	6,742,946	57.8	4,914,770	3,636,460	3,659,795	6,431,892
Duluth, Winnipeg & Pacific	July	178	103,225	17,381	135,200	32,018	39,137	4,748	58,313	6,893	145,786	107.8	—10,586	—17,346	—13,354	20,016
	7 mos.	178	980,181	75,204	1,118,867	210,645	261,268	36,186	473,572	53,037	1,056,931	94.5	61,936	4,893	13,176	186,824
Elgin, Joliet & Eastern	July	452	1,581,445	7	1,748,694	157,621	382,419	17,217	682,878	54,857	1,294,174	74.0	454,520	337,156	202,477	653,348
	7 mos.	452	12,729,454	2,305	14,013,167	1,515,689	2,821,847	112,953	5,234,161	379,143	10,054,426	71.7	3,958,741	3,126,787	1,890,136	3,613,307
Erie Railroad	July	2,046	6,523,175	938,856	8,148,651	1,116,377	1,770,518	173,868	3,046,001	294,687	6,425,904	78.9	1,722,747	1,323,756	1,195,875	1,586,620
	7 mos.	2,046	45,689,641	5,620,570	56,212,959	6,811,233	13,102,464	1,266,921	22,084,928	2,116,819	45,638,159	81.2	10,574,800	7,782,773	7,251,574	10,701,054
Chicago & Erie	July	269	880,146	62,367	1,022,827	158,810	139,997	28,569	323,353	42,115	689,715	67.4	333,112	274,967	8,790	111,230
	7 mos.	269	7,009,907	377,108	7,998,600	931,384	960,270	210,353	2,434,405	307,680	4,835,358	60.5	3,163,242	2,756,004	851,867	1,477,593

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
New Jersey & New York	July	45	$21,401	$98,008	$123,702	$21,757	$20,626	$1,440	$59,709	$5,058	$108,590	87.8	$15,112	$10,779	—$18,527	—$19,390
	7 mos.	45	160,990	646,609	840,995	109,428	156,049	11,540	442,388	27,067	746,434	88.8	94,561	62,070	—153,075	—151,995
N. Y., Susquehanna & Western	July	131	318,212	42,983	389,151	54,859	42,899	4,547	165,721	11,564	279,582	71.8	109,569	78,017	61,001	15,933
	7 mos.	131	2,176,960	278,461	2,710,142	340,575	329,850	34,718	1,195,505	84,395	1,984,818	73.2	725,324	504,435	326,260	324,320
Florida East Coast	July	863	294,497	131,304	504,061	141,335	176,008	27,150	245,394	48,213	648,829	128.7	—144,768	—267,955	—300,020	—102,500
	7 mos.	863	4,312,640	2,818,555	8,222,750	1,114,105	1,401,810	217,172	2,375,883	315,577	5,567,135	67.7	2,655,615	1,764,785	1,244,617	2,248,956
Fort Smith & Western	July	249	93,030	5,611	104,154	22,330	19,083	5,259	36,409	6,145	88,188	84.7	15,966	12,406	—691	6,365
	7 mos.	249	667,046	47,590	761,941	151,819	158,055	39,692	276,414	45,856	665,830	87.4	96,111	65,324	—14,554	16,371
Galveston Wharf	July	13	.....	.....	199,024	38,581	5,702	3,594	32,709	6,970	109,522	55.0	89,502	74,782	75,085	62,552
	7 mos.	13	.....	.....	918,599	246,200	42,910	29,864	195,263	46,059	658,508	71.7	260,091	95,371	97,820	319,817
Georgia R. R.	July	328	309,516	42,571	378,210	43,860	72,747	21,716	162,576	22,653	323,042	85.4	55,168	47,856	65,338	65,796
	7 mos.	328	2,245,997	299,163	2,755,272	319,681	555,248	157,902	1,209,493	160,005	2,400,292	87.1	354,980	294,435	390,311	516,842
Georgia & Florida	July	501	129,044	4,952	140,372	32,728	20,985	10,697	51,546	7,769	123,941	88.3	16,431	7,731	3,490	20,083
	7 mos.	501	788,164	41,411	881,318	213,500	150,461	70,487	354,997	57,482	848,466	96.3	32,852	—31,175	—37,032	42,885
Grand Trunk Western	July	1,019	1,599,993	219,520	1,975,163	371,443	408,492	66,896	870,097	96,084	1,831,272	92.7	143,891	—15,208	—206,973	576,389
	7 mos.	1,019	14,479,540	1,186,195	16,818,311	2,420,183	3,156,484	509,301	6,840,910	727,666	13,740,442	81.7	3,077,869	2,049,203	839,337	4,481,943
Atlantic & St. Lawrence	July	166	93,820	22,782	131,773	63,092	40,640	5,612	84,447	9,163	204,048	154.8	—72,275	—86,555	—124,101	—68,156
	7 mos.	166	908,007	147,056	1,172,678	233,968	304,051	42,999	633,294	61,497	1,286,068	109.6	—113,390	—214,015	—567,870	—635,706
Great Northern	July	8,366	7,149,547	885,704	9,115,041	1,291,167	1,619,966	238,485	2,780,750	246,046	6,265,452	68.7	2,849,589	2,044,705	1,931,197	3,000,053
	7 mos.	8,366	43,481,429	5,464,159	54,851,942	9,524,175	11,162,219	1,801,050	19,297,437	1,695,879	44,025,982	80.3	10,825,960	5,774,319	5,243,394	13,693,437
Green Bay & Western	July	234	132,510	3,136	139,453	30,067	23,880	6,726	51,091	3,007	114,771	82.3	24,682	15,182	11,026	39,319
	7 mos.	234	984,592	20,462	1,037,592	167,649	154,036	44,051	386,942	20,474	772,869	64.4	264,723	201,163	162,649	169,296
Gulf & Ship Island	July	307	96,311	27,358	142,125	45,749	24,807	4,609	74,013	6,416	158,319	11.4	—16,194	—48,403	—61,821	—12,708
	7 mos.	307	1,225,606	210,633	1,629,243	339,168	274,613	33,714	648,070	48,073	1,365,937	83.8	263,306	38,235	—55,555	—52,274
Gulf, Mobile & Northern	July	733	389,722	19,207	428,564	87,307	66,969	27,910	158,067	26,062	366,174	85.44	62,390	33,874	2,606	96,325
	7 mos.	733	3,267,304	159,320	3,583,138	637,774	607,322	216,985	1,181,339	190,025	2,835,440	79.13	747,698	534,826	320,605	689,872
Illinois Central	July	5,018	7,731,939	1,269,863	9,710,413	1,160,891	2,285,884	261,368	3,664,734	355,986	7,799,821	80.3	1,910,592	1,500,694	1,414,677	1,463,653
	7 mos.	5,018	58,692,908	10,571,904	75,741,118	9,089,907	17,605,916	1,883,964	28,473,681	2,565,418	60,202,440	79.5	15,538,678	10,574,994	10,192,949	13,774,965
Yazoo & Mississippi Valley	July	1,705	1,334,541	213,995	1,659,705	290,294	344,500	42,581	712,795	62,928	1,460,696	88.0	199,009	27,521	—97,662	22,665
	7 mos.	1,705	11,432,975	1,663,069	13,995,859	2,128,502	2,485,346	314,434	5,542,272	458,914	10,953,594	78.3	3,042,265	1,864,221	1,146,059	565,896
Illinois Central System	July	6,724	9,066,480	1,483,858	11,370,118	1,451,185	2,630,384	303,949	4,377,529	418,914	9,260,517	81.4	2,109,601	1,528,215	1,317,015	1,486,071
	7 mos.	6,724	70,175,962	12,251,234	89,803,321	11,218,409	20,113,333	2,198,398	34,050,641	3,025,130	71,212,591	79.3	18,589,730	12,442,659	11,342,452	14,342,882
Illinois Terminal	July	549	464,589	104,380	601,515	85,889	88,168	19,641	205,434	45,650	441,007	73.32	160,508	125,658	87,602	136,338
	7 mos.	549	3,271,400	872,479	4,363,169	523,465	580,412	134,421	1,554,832	302,015	3,082,426	70.65	1,280,743	1,080,666	780,146	969,937
Kansas City Southern	July	784	1,386,012	70,952	1,615,512	177,864	250,766	64,460	453,025	81,081	1,030,844	63.8	584,668	480,332	407,752	352,799
	7 mos.	784	8,640,739	500,095	10,160,125	1,150,590	1,745,989	442,171	3,068,549	568,431	7,001,848	68.9	3,158,277	2,399,861	1,980,351	2,114,779
Texarkana & Ft. Smith	July	99	218,437	5,099	239,152	27,924	25,045	9,703	57,653	10,692	135,302	56.6	103,850	103,531	68,981	113,458
	7 mos.	99	1,338,937	38,598	1,514,612	196,619	161,147	62,203	395,976	81,827	916,821	60.5	597,791	503,302	282,432	576,289
Kansas, Oklahoma & Gulf	July	326	251,627	1,777	259,498	40,042	30,518	15,328	72,059	11,993	168,927	65.1	90,571	66,548	45,417	138,659
	7 mos.	326	1,757,886	14,029	1,806,191	208,474	170,517	111,902	452,984	80,339	1,022,301	56.6	783,890	637,459	494,267	721,092
Lake Superior & Ishpeming	July	160	306,880	366	359,703	59,158	27,336	783	55,292	6,269	148,838	41.4	210,865	171,366	169,458	197,149
	7 mos.	160	1,121,011	6,540	1,296,710	244,580	194,910	4,279	302,962	43,903	790,616	61.0	506,094	295,032	274,339	657,999
Lake Terminal	July	12	.....	.....	116,802	15,131	13,119	.....	49,372	2,230	79,852	68.4	36,950	41,710	39,233	49,959
	7 mos.	12	.....	.....	568,411	93,544	84,842	.....	289,475	17,226	485,087	85.3	83,324	50,585	21,511	101,184
Lehigh & Hudson River	July	96	163,128	1,009	173,284	16,252	21,367	3,232	62,295	9,032	112,178	64.7	61,106	42,113	27,650	52,732
	7 mos.	96	1,229,473	7,184	1,310,315	179,087	212,978	24,600	475,579	71,609	963,853	73.6	346,462	248,338	141,179	221,907
Lehigh & New England	July	216	412,304	1,028	419,939	51,967	83,851	4,823	146,973	32,220	319,801	76.2	100,138	87,468	76,826	16,529
	7 mos.	216	2,790,260	6,116	2,835,959	357,764	590,978	48,728	1,021,345	161,336	2,180,118	76.9	655,841	566,770	531,704	445,948
Lehigh Valley	July	1,361	4,263,564	503,527	5,155,501	532,143	1,047,652	147,574	2,047,218	139,550	3,942,586	76.5	1,212,915	898,035	802,107	760,785
	7 mos.	1,361	29,625,486	3,336,389	35,889,236	3,292,320	7,931,685	1,017,548	15,139,215	1,011,663	28,589,504	79.7	7,299,732	5,206,702	4,507,679	6,502,449
Louisiana & Arkansas	July	608	588,179	20,802	633,174	92,720	72,200	22,990	172,618	31,028	387,441	61.2	245,733	200,817	164,708	88,376
	7 mos.	623	3,954,231	142,978	4,281,510	640,696	700,910	150,269	1,282,898	183,524	2,954,682	69.0	1,326,828	1,003,250	694,190	640,390
Louisiana, Arkansas & Texas	July	202	68,709	1,936	73,671	20,901	12,205	2,176	31,559	4,785	71,554	96.2	2,117	—1,883	—10,544	—4,579
	7 mos.	204	507,984	13,946	543,071	165,888	105,226	21,652	257,859	38,341	589,321	108.4	—46,250	—74,331	—157,244	—143,366
Louisville & Nashville	July	5,252	7,463,831	881,455	8,970,606	1,425,144	2,296,132	211,457	3,292,480	367,911	7,623,232	85.0	1,347,374	822,692	812,127	1,533,215
	7 mos.	5,247	55,736,523	7,424,475	67,588,608	10,960,532	17,222,837	1,746,963	24,732,967	2,588,987	57,563,577	85.2	10,025,031	6,433,919	6,570,747	10,294,543
Maine Central	July	1,121	1,079,054	289,336	1,525,462	275,593	298,098	20,092	584,058	51,129	1,235,929	81.0	289,533	191,955	181,331	260,191
	7 mos.	1,121	8,779,901	1,619,686	11,377,633	1,753,587	2,111,324	121,309	4,265,277	355,773	8,620,969	75.8	2,756,664	2,078,499	1,721,026	1,939,355

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Midland Valley	July	363	$242,478	$5,254	$256,064	$50,353	$20,588	$6,195	$58,483	$14,187	$149,661	58.4	$106,403	$91,290	$75,036	$92,091
	7 mos.	363	1,617,740	43,751	1,716,715	248,234	221,088	39,544	444,362	89,948	1,038,710	60.5	678,005	575,427	467,159	533,055
Minneapolis & St. Louis	July	1,627	984,727	46,303	1,091,459	154,514	217,153	39,389	476,323	44,693	932,145	85.4	159,314	91,893	46,841	752,251
	7 mos.	1,627	6,302,083	355,441	7,098,392	993,429	1,484,915	267,151	3,344,990	309,630	6,400,060	90.2	698,332	261,694	—50,179	970,428
Minn., St. Paul & S. S. Marie	July	4,374	2,729,549	423,174	3,492,680	538,341	641,559	87,171	1,283,488	125,552	2,709,744	77.6	782,936	540,991	385,719	1,068,839
	7 mos.	4,400	18,312,420	2,036,887	22,276,813	3,587,154	4,733,659	575,778	8,878,959	882,606	18,791,619	84.4	3,485,194	1,887,598	891,974	4,004,514
Duluth, South Shore & Atlantic	July	573	268,738	35,425	341,729	84,841	61,092	8,676	134,870	11,029	303,276	88.7	38,453	3,452	—1,906	40,560
	7 mos.	573	1,979,034	243,052	2,405,215	445,301	455,154	58,687	1,009,531	74,892	2,059,172	85.6	346,043	110,870	36,715	211,549
Spokane International	July	165	71,253	6,830	84,223	18,759	7,326	3,661	26,475	6,012	63,239	75.1	20,984	15,957	10,972	27,252
	7 mos.	165	446,143	45,523	534,238	119,289	53,642	24,334	196,099	42,761	442,836	82.9	91,402	55,833	18,899	111,503
Mississippi Central	July	150	85,143	4,779	93,157	12,033	15,001	9,772	29,965	7,948	74,719	80.2	18,438	12,208	10,372	29,885
	7 mos.	150	722,085	34,476	784,242	117,309	158,675	69,695	231,702	58,717	636,095	81.1	148,147	102,395	102,171	196,219
Missouri & North Arkansas	July	364	108,576	6,637	121,291	37,001	16,615	9,816	48,411	8,478	119,433	98.5	1,858	—542	—12,112	16,343
	7 mos.	364	883,770	44,355	981,972	219,822	113,079	66,976	376,123	56,208	832,239	84.8	149,733	132,692	40,129	—6,609
Missouri-Illinois	July	202	148,952	1,291	152,798	15,322	36,363	3,292	44,983	5,280	105,229	68.9	47,569	39,912	27,361	50,392
	7 mos.	202	1,042,786	11,836	1,076,834	162,775	235,460	24,203	323,892	46,962	792,079	73.6	284,755	236,945	175,632	304,100
Missouri-Kansas-Texas Lines	July	3,188	3,576,823	399,709	4,288,368	501,588	612,789	120,892	1,189,166	160,008	2,592,442	60.5	1,695,926	1,385,843	1,158,465	1,158,516
	7 mos.	3,188	20,543,587	3,060,087	25,849,364	3,540,788	4,502,159	868,883	8,407,124	1,199,789	18,591,432	71.9	7,257,932	5,621,435	4,109,676	6,070,891
Missouri Pacific	July	7,450	9,060,858	913,584	10,770,619	1,841,998	1,925,659	314,656	3,495,787	373,731	7,927,618	73.6	2,843,001	2,362,006	1,962,782	3,154,864
	7 mos.	7,451	58,509,265	6,433,678	71,004,122	11,121,906	12,587,164	2,141,085	25,243,034	2,712,493	53,763,116	75.7	17,241,006	14,124,725	11,284,482	12,618,376
Gulf Coast Lines	July	1,026	950,789	97,498	1,106,496	207,695	208,691	44,081	265,233	63,121	708,534	71.26	317,962	269,747	222,281	279,059
	7 mos.	1,026	8,625,774	867,817	10,061,172	1,684,516	1,663,053	326,365	2,544,923	441,524	6,621,469	65.81	3,439,703	3,100,782	2,360,410	1,764,324
International-Great Northern	July	1,159	930,529	142,543	1,185,508	213,189	217,050	38,616	483,413	72,362	1,036,934	87.47	148,574	103,752	32,744	361,773
	7 mos.	1,159	6,827,330	1,035,351	8,759,087	1,486,624	1,656,641	303,949	3,734,108	499,930	7,731,541	88.27	1,027,546	721,855	92,054	1,152,464
San Antonio, Uvalde & Gulf	July	318	101,452	15,139	122,619	40,322	21,230	5,892	26,208	7,631	100,700	82.1	21,919	17,228	—8,765	—18,500
	7 mos.	318	887,257	111,758	1,091,697	278,498	131,709	43,087	272,389	54,460	773,927	70.9	317,770	284,600	96,571	108,292
Mobile & Ohio	July	1,159	1,047,339	65,456	1,187,637	179,284	216,434	57,499	441,504	52,205	945,297	79.6	242,340	152,890	86,591	218,119
	7 mos.	1,159	7,728,973	463,832	8,687,197	1,312,100	1,655,801	399,866	3,313,724	354,395	7,018,601	80.8	1,668,596	1,059,604	613,093	1,393,919
Monongahela	July	177	490,145	4,168	498,101	70,000	65,000	1,321	122,251	10,432	268,423	53.9	229,678	208,233	112,275	165,618
	7 mos.	177	3,626,187	41,965	3,698,245	550,000	485,000	9,000	978,751	75,907	2,090,741	56.5	1,607,504	1,482,106	776,738	1,197,675
Monongahela Connecting	July	6	.....	.....	165,377	17,476	37,005	300	70,090	2,805	127,676	77.2	37,701	29,692	24,440	48,177
	7 mos.	6	.....	.....	1,248,256	147,011	242,774	2,127	545,329	19,575	956,816	76.7	291,440	231,529	175,972	334,322
Montour	July	57	228,288	66	229,555	31,080	59,527	1,317	51,619	8,537	151,767	66.1	77,788	76,013	81,163	101,467
	7 mos.	57	1,455,794	363	1,460,517	177,044	367,781	9,601	371,561	55,173	980,752	67.2	479,765	467,340	536,603	508,113
Nashville, Chatt. & St. Louis	July	1,203	1,428,476	167,047	1,724,843	249,802	330,355	77,950	632,315	80,024	1,376,511	79.8	348,332	269,640	267,312	441,408
	7 mos.	1,203	9,500,580	1,370,734	11,912,964	1,825,046	2,510,548	586,011	4,549,975	557,023	10,069,946	84.5	1,843,018	1,383,221	1,346,201	2,852,120
Nevada Northern	July	165	47,805	2,569	55,786	12,647	4,389	999	12,566	4,774	35,448	53.5	20,338	11,983	13,748	51,635
	7 mos.	165	399,357	22,457	472,285	89,055	40,727	7,332	102,985	32,474	273,016	57.8	199,269	136,044	140,445	409,143
Newburgh & South Shore	July	6	.....	.....	117,852	20,247	28,395	.....	49,021	5,834	103,497	87.8	14,355	—272	—774	39,503
	7 mos.	6	.....	.....	840,144	65,098	56,441	.....	388,782	43,091	553,412	65.9	286,732	175,997	186,192	238,865
New Orleans Great Northern	July	264	199,558	15,513	222,997	16,008	36,868	14,617	73,426	10,804	151,723	68.0	71,274	58,363	39,801	30,207
	7 mos.	269	1,548,567	96,819	1,700,930	197,114	299,451	84,675	554,161	76,232	1,209,251	71.1	491,679	386,064	168,518	244,049
New Orleans Terminal	July	20	2,257	.....	123,137	14,381	15,772	.....	50,742	1,817	82,712	67.2	40,425	29,168	25,167	11,518
	7 mos.	20	15,304	.....	975,573	132,553	96,971	.....	387,371	12,012	628,907	64.5	346,666	267,864	273,599	382,875
New York Central	July	11,477	24,665,900	9,810,740	39,160,917	5,948,276	7,860,697	838,073	14,177,843	1,401,417	30,732,041	78.5	8,428,876	5,532,766	4,475,971	9,421,841
	7 mos.	11,477	185,360,104	67,018,750	287,858,215	37,250,592	63,088,514	5,674,175	104,514,549	9,893,193	224,969,456	78.2	62,888,759	42,095,005	36,636,249	60,511,575
Indiana Harbor Belt	July	120	.....	.....	844,619	80,000	55,539	4,434	331,367	33,122	516,522	61.2	328,097	309,356	231,912	288,043
	7 mos.	120	.....	.....	6,422,181	600,000	709,539	34,583	2,728,013	211,436	4,389,701	68.4	2,032,480	1,703,740	1,469,301	1,819,420
Pittsburgh & Lake Erie	July	231	2,395,071	151,509	2,622,349	251,062	746,186	42,248	801,341	82,121	1,932,419	73.7	689,930	527,630	804,420	813,172
	7 mos.	231	15,353,305	1,093,224	16,990,441	1,797,769	5,134,163	272,920	5,667,251	558,020	13,504,571	79.5	3,485,870	2,368,435	4,342,462	4,640,414
New York, Chicago & St. Louis	July	1,690	3,389,094	201,957	3,751,658	563,913	698,972	129,878	1,341,652	148,896	2,884,599	76.9	867,059	646,409	339,240	915,328
	7 mos.	1,690	25,794,774	1,176,833	28,048,874	3,700,143	5,437,367	934,253	10,374,444	983,657	21,373,416	76.2	6,675,458	5,241,683	3,575,059	6,327,084
N. Y., New Haven & Hartford	July	2,132	5,134,574	3,552,754	9,698,276	1,561,665	1,487,682	107,735	3,182,217	311,462	6,822,566	70.4	2,875,710	2,351,019	1,740,375	2,777,171
	7 mos.	2,132	37,333,344	25,015,433	70,546,751	10,050,486	11,019,576	729,611	22,890,932	2,243,775	48,260,946	68.4	22,285,805	17,661,434	13,643,056	16,942,096
New York Connecting	July	20	174,845	.....	193,588	26,556	12,233	.....	34,169	1,542	74,500	38.5	119,088	82,088	53,832	85,412
	7 mos.	20	1,313,826	.....	1,496,717	148,664	77,579	.....	236,519	12,463	475,225	31.8	1,021,492	758,492	577,574	601,813
New York, Ontario & Western	July	568	634,020	382,956	1,186,271	171,430	176,052	15,712	416,952	27,595	809,280	68.2	376,991	334,485	282,667	293,854
	7 mos.	568	4,317,271	799,037	6,167,789	835,348	1,270,321	120,754	2,711,189	222,048	5,191,214	84.2	976,575	678,621	370,755	367,643

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Norfolk & Western	July	2,240	$7,943,572	$328,950	$8,538,140	$915,705	$1,518,760	$131,151	$2,002,574	$250,622	$4,818,349	56.4	$3,719,791	$2,918,516	$3,119,240	$4,109,542
	7 mos.	2,240	55,183,762	2,376,945	59,702,004	7,546,538	11,324,590	907,256	14,446,488	1,774,969	36,094,217	60.5	23,607,787	17,604,181	19,016,311	23,143,604
Norfolk Southern	July	932	496,999	31,615	556,762	88,979	78,702	28,618	224,508	25,879	446,661	80.2	110,101	59,423	52,212	104,225
	7 mos.	932	3,762,681	165,195	4,154,094	592,914	636,725	206,146	1,645,440	192,945	3,266,177	78.6	887,917	522,599	400,394	758,889
Northern Pacific	July	6,785	5,131,314	811,900	6,645,513	827,242	1,319,372	285,415	2,326,957	256,032	5,167,653	77.8	1,477,860	833,789	1,162,358	1,851,114
	7 mos.	6,783	35,181,274	4,784,047	44,522,089	6,745,171	10,019,247	1,787,761	16,717,673	1,821,451	37,897,275	85.1	6,624,814	1,904,474	4,167,706	9,048,192
Northwestern Pacific	July	441	372,294	178,822	597,419	77,406	46,042	6,582	214,904	12,079	356,727	59.7	240,692	204,787	195,195	125,625
	7 mos.	455	1,939,584	944,458	3,167,396	767,296	578,182	55,239	1,437,290	111,344	2,944,975	93.0	222,421	—30,310	—75,023	—22,648
Oklahoma City, Ada-Atoka	July	129	66,113	3,905	73,028	26,702	3,785	1,221	23,841	3,587	59,130	81.0	13,898	9,505	—3,797	46,564
	7 mos.	129	487,155	37,748	549,569	183,322	56,102	9,331	187,238	27,465	460,276	83.8	89,293	59,308	—36,362	—6,527
Pennsylvania R. R.	July	10,878	35,057,707	9,694,135	49,534,962	6,276,808	8,948,031	797,354	17,548,473	1,679,076	35,832,590	72.3	13,702,372	9,985,207	8,702,513	14,079,578
	7 mos.	10,933	239,867,724	70,105,472	344,247,422	42,356,380	68,036,779	6,245,581	127,012,604	11,955,696	259,961,781	75.5	84,285,641	62,577,597	54,054,643	79,076,281
Long Island	July	404	823,237	3,016,728	4,018,939	388,208	400,093	31,607	1,290,690	73,784	2,184,746	54.4	1,834,193	1,349,828	1,180,528	1,357,522
	7 mos.	404	5,787,693	15,849,844	22,806,397	2,905,644	3,126,103	170,887	9,032,225	474,515	15,713,514	68.9	7,092,883	5,443,173	4,378,427	5,102,413
West Jersey & Seashore	July		Included in Pennsylvania Railroad													
	7 mos.		Included in Pennsylvania Railroad													
Peoria & Pekin Union	July	19	15,526	1,013	126,316	22,632	13,544	5,334	52,535	8,091	102,136	80.9	24,180	8,444	34,082	43,369
	7 mos.	19	104,604	7,832	968,055	160,486	104,634	36,531	441,483	57,500	800,634	82.7	167,421	51,973	190,281	278,647
Pere Marquette	July	2,264	2,727,818	255,959	3,182,672	465,907	588,630	77,309	1,112,242	115,893	2,355,738	74.0	826,934	639,959	536,388	1,184,437
	7 mos.	2,244	19,904,327	1,332,018	22,582,700	3,275,439	4,743,498	529,927	8,294,713	825,340	17,681,675	78.3	4,901,025	3,802,950	2,650,898	5,912,855
Pittsburgh & Shawmut	July	102	96,100	2,637	101,805	14,185	20,658	1,680	28,580	6,313	71,416	70.1	30,389	28,977	29,809	14,807
	7 mos.	102	696,993	28,767	739,148	97,450	166,743	11,520	220,111	46,771	542,595	73.4	196,553	187,242	202,457	229,867
Pittsburgh & West Virginia	July	92	304,177	2,939	332,866	14,730	78,520	18,918	60,050	18,303	201,303	60.5	131,563	104,298	153,984	202,529
	7 mos.	92	2,077,839	21,810	2,294,784	146,075	527,399	140,165	433,524	141,902	1,457,460	63.5	837,324	633,495	984,583	1,529,508
Pittsburgh, Shawmut & Northern	July	198	114,742	555	118,733	45,755	25,488	1,594	41,152	6,395	120,384	101.4	—1,651	—4,463	—11,055	10,666
	7 mos.	198	907,035	6,782	938,783	214,102	188,833	12,470	318,252	46,574	780,231	83.1	158,552	138,549	87,118	171,065
Quincy, Omaha & Kansas City	July	249	60,805	4,888	70,960	30,222	7,101	1,054	24,646	2,428	65,410	92.2	5,550	867	—1,892	—10,931
	7 mos.	249	297,490	41,844	381,384	167,197	47,283	6,173	172,473	18,123	410,383	107.6	—28,999	—61,853	—78,763	—115,977
Reading	July	1,455	5,912,345	472,213	6,815,103	1,152,404	1,746,405	94,228	2,739,434	236,139	5,992,778	87.9	822,325	561,787	574,500	1,244,780
	7 mos.	1,460	44,471,373	3,642,160	51,297,836	7,786,931	12,815,162	688,842	19,959,581	1,580,085	43,000,843	83.8	8,296,993	6,324,583	6,345,008	9,019,542
Atlantic City	July	163	103,133	323,496	452,177	55,866	28,830	4,360	224,258	3,798	317,521	70.2	134,656	93,466	64,524	213,144
	7 mos.	163	781,441	856,302	1,770,425	489,867	158,080	27,689	1,175,462	36,775	1,889,129	106.7	—118,704	—407,410	—535,348	—215,700
Richmond, Fredericksburg & Potomac	July	117	493,460	189,608	798,266	117,153	159,330	10,843	281,497	45,561	628,576	78.7	169,690	127,589	82,819	151,986
	7 mos.	117	3,383,899	2,125,455	6,763,143	985,801	1,232,256	75,481	2,325,053	272,496	5,078,303	75.1	1,684,840	1,348,148	921,122	1,623,449
Rutland	July	413	261,546	84,380	451,310	98,539	84,080	11,383	171,606	15,849	383,625	85.0	67,685	44,646	47,086	82,602
	7 mos.	413	1,884,098	528,325	3,095,873	567,330	640,910	80,611	1,264,873	117,725	2,683,048	86.7	412,825	262,698	309,059	476,554
St. Louis-San Francisco	July	5,307	5,098,858	680,916	6,266,199	771,339	1,194,567	134,948	2,028,673	224,995	4,373,646	69.80	1,892,553	1,508,339	1,574,757	1,818,757
	7 mos.	5,307	33,651,359	5,128,322	42,297,558	5,351,615	8,189,833	908,930	14,869,138	1,619,862	30,773,737	72.76	11,523,821	9,109,922	9,202,997	10,793,564
Ft. Worth & Rio Grande	July	233	51,652	3,791	63,842	16,816	14,938	3,427	37,397	5,084	77,659	121.6	—13,817	—18,233	—26,538	—20,094
	7 mos.	233	409,575	30,256	498,178	141,505	108,029	22,042	275,582	32,611	578,348	116.1	—80,170	—111,612	—171,553	—63,714
St. Louis-San Francisco & Texas	July	262	176,980	9,084	193,074	30,938	26,453	5,681	59,174	8,117	130,329	67.5	62,745	58,878	29,483	18,250
	7 mos.	262	924,341	69,567	1,044,685	181,201	165,563	44,318	404,557	133,840	927,264	88.8	117,421	88,607	—112,828	—17,813
St. Louis Southwestern Lines	July	1,816	1,605,120	77,616	1,806,656	289,911	237,921	109,046	634,867	94,127	1,370,266	75.8	436,390	384,147	163,057	264,803
	7 mos.	1,816	12,178,616	552,324	13,730,063	2,095,208	2,179,224	777,875	4,755,072	678,532	10,577,820	77.0	3,152,243	2,556,893	1,486,206	1,730,406
San Diego & Arizona	July	155	65,615	19,804	92,695	18,280	16,116	3,760	25,440	7,202	72,006	77.7	20,689	15,102	16,749	31,151
	7 mos.	155	570,056	127,305	719,297	116,837	117,828	27,542	187,462	56,387	515,337	71.6	203,960	166,025	170,494	239,498
Seaboard Air Line	July	4,493	2,848,797	322,308	3,473,793	516,189	699,702	189,066	1,405,117	162,855	2,993,946	86.2	479,847	188,139	190,460	775,766
	7 mos.	4,498	23,741,341	3,882,024	30,576,764	4,165,753	5,405,771	1,422,093	11,298,954	1,234,203	23,865,625	78.1	6,711,139	4,383,848	3,858,202	6,898,629
Southern Ry.	July	6,731	7,302,479	1,435,602	9,466,962	1,183,219	1,646,626	213,031	3,190,317	359,571	6,664,518	70.4	2,802,444	2,113,644	2,001,970	2,371,984
	7 mos.	6,731	54,632,747	10,595,810	71,130,931	10,985,140	14,054,236	1,672,861	25,044,653	2,589,477	54,897,997	77.2	16,232,934	10,989,511	9,933,644	17,287,599
Alabama Great Southern	July	314	459,442	98,772	600,799	129,072	152,754	18,899	214,652	23,585	545,163	90.7	55,636	13,186	41,800	169,514
	7 mos.	314	3,827,779	714,047	4,887,662	923,532	1,154,056	139,632	1,563,208	170,407	3,994,039	81.7	893,623	542,171	672,266	1,418,604
Cinn., New Orleans & Tex. Pacific	July	338	1,311,170	150,990	1,528,437	242,233	322,985	39,027	440,321	53,624	1,105,103	72.3	423,334	326,082	333,058	415,933
	7 mos.	338	9,208,493	1,345,652	11,172,469	1,924,081	2,525,470	287,315	3,302,470	374,297	8,493,232	76.0	2,679,237	2,061,356	2,003,365	1,923,779
Georgia Southern & Florida	July	397	240,262	44,671	302,560	58,058	52,392	1,608	108,822	2,357	226,310	74.8	76,250	53,257	56,014	51,920
	7 mos.	397	1,551,098	555,121	2,283,298	463,731	494,089	16,547	829,395	19,243	1,865,694	81.7	417,604	246,321	210,596	321,614
New Orleans Northeastern	July	204	259,655	46,307	326,213	54,264	72,230	10,237	110,286	15,219	265,663	81.4	60,550	19,448	4,149	55,202
	7 mos.	204	2,089,222	354,383	2,613,119	423,614	506,876	77,503	828,718	101,970	1,963,329	75.1	649,790	349,568	150,381	495,894

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Northern Alabama	July	110	$64,790	$3,006	$69,876	$15,165	$2,910	$1,456	$26,203	$3,228	$48,961	70.1	$20,915	$15,376	—$3,606	$13,644
	7 mos.	110	574,947	25,053	620,139	141,589	24,318	15,541	205,758	21,995	409,164	66.0	210,975	171,250	32,260	121,976
Southern Pacific	July	9,127	11,959,305	3,132,390	16,576,680	1,988,574	2,535,434	377,817	5,287,880	630,710	11,059,450	66.7	5,517,230	4,144,056	3,559,463	5,291,796
	7 mos.	9,123	79,277,804	21,057,903	110,045,864	14,430,043	19,714,560	3,014,282	37,013,221	4,666,081	80,645,911	73.3	29,399,953	20,418,404	17,527,065	27,108,000
So. Pacific Steamship Lines	July	....	540,275	71,971	655,163	25,647	137,126	20,176	468,428	35,663	687,040	104.9	—31,877	—33,202	—32,850	—120,440
	7 mos.	....	4,053,000	360,001	4,717,766	135,420	1,182,204	155,467	3,336,418	295,988	5,105,497	108.2	—387,731	—397,323	—377,494	58,900
Texas & New Orleans	July	4,721	4,133,706	703,516	5,182,013	788,303	975,692	165,377	1,682,035	251,889	3,858,853	74.5	1,323,160	974,524	688,282	900,721
	7 mos.	4,721	27,979,229	5,153,577	35,916,544	6,114,631	7,369,665	1,286,305	12,255,194	1,833,339	28,907,308	80.5	7,009,236	4,843,566	2,914,738	5,527,763
Spokane, Portland & Seattle	July	554	514,218	95,083	668,981	122,774	96,353	12,885	201,241	22,863	463,207	69.2	205,774	119,140	105,528	194,547
	7 mos.	554	3,583,960	530,365	4,519,535	681,967	709,321	88,884	1,500,579	162,944	3,185,713	70.5	1,333,822	724,728	626,178	1,143,709
Tennessee Central	July	296	253,736	10,892	277,595	44,241	29,879	9,321	99,074	14,667	197,004	71.0	80,591	70,491	53,741	67,269
	7 mos.	296	1,634,735	74,937	1,803,074	351,460	287,231	65,713	650,006	99,399	1,450,687	80.5	352,387	309,623	193,661	242,885
Terminal R. R. Assn. of St. L.	July	55	.....	.....	831,666	125,206	78,566	3,194	375,174	25,876	610,166	73.4	221,500	97,729	185,881	366,712
	7 mos.	55	.....	.....	6,189,849	903,895	629,980	21,702	2,900,484	188,329	4,666,265	75.4	1,523,584	781,504	1,405,259	2,226,216
Texas & Pacific	July	1,955	2,747,978	370,756	3,329,952	477,273	555,319	86,974	1,026,616	128,035	2,275,429	68.3	1,054,523	893,153	663,825	1,196,757
	7 mos.	1,955	18,496,361	2,759,491	22,870,291	3,347,827	3,830,354	624,484	7,355,356	893,180	16,067,099	70.3	6,803,192	5,537,782	4,103,209	5,078,186
Texas Mexican	July	162	83,666	3,939	94,616	16,579	14,164	3,962	38,647	7,506	76,200	80.5	18,416	13,368	8,642	26,861
	7 mos.	162	572,266	23,140	667,933	113,856	116,492	24,242	279,115	57,185	579,870	86.8	88,063	52,977	—3,246	85,391
Toledo, Peoria & Western	July	239	172,707	153	176,885	17,693	16,352	13,711	60,301	13,283	121,340	68.6	55,545	46,613	35,735	52,142
	7 mos.	239	1,111,478	1,913	1,140,481	136,479	172,895	100,984	459,732	66,487	936,559	82.1	203,922	165,202	99,380	291,256
Toledo Terminal	July	28	.....	.....	79,803	18,688	14,177	643	39,770	5,431	78,629	90.1	1,174	—8,412	7,168	52,517
	7 mos.	28	.....	.....	694,100	102,885	119,323	4,110	331,641	35,457	592,922	85.4	101,178	324	151,151	370,642
Ulster & Delaware	July	128	36,578	55,256	130,122	Cr. 1,755	16,690	2,238	59,273	2,690	79,136	60.8	50,986	41,886	36,069	36,500
	7 mos.	128	227,657	85,089	572,956	85,739	94,715	10,112	284,180	27,337	502,083	87.6	70,873	33,273	16,428	12,584
Union R. R. of Penna.	July	45	.....	.....	937,803	95,921	177,026	199	329,404	16,694	617,473	65.8	320,330	299,930	387,308	487,107
	7 mos.	45	.....	.....	5,386,058	636,562	1,168,560	1,141	2,308,038	105,205	4,216,739	78.3	1,169,319	957,119	1,398,159	2,150,810
Union Pacific	July	3,765	7,734,304	1,216,248	9,935,296	1,136,287	1,845,885	196,723	2,915,577	328,808	6,624,341	66.7	3,310,955	2,702,526	2,389,243	2,081,951
	7 mos.	3,765	42,893,886	7,347,573	55,878,952	6,133,463	12,757,693	1,389,843	17,084,116	2,332,763	40,792,403	73.0	15,086,549	10,393,531	9,315,984	12,922,155
Oregon Short Line	July	2,539	1,889,609	307,783	2,589,439	530,142	446,637	56,817	832,941	124,519	2,035,596	78.6	553,843	250,284	140,722	414,843
	7 mos.	2,538	14,550,954	1,779,911	17,916,997	3,144,644	3,138,832	405,412	5,618,815	884,350	13,481,413	75.2	4,435,584	2,302,876	1,722,054	3,581,313
Oregon-Wash. R. R. & Nav.	July	2,364	1,616,155	217,332	2,059,032	388,661	326,287	78,038	758,414	123,200	1,694,345	82.3	364,687	173,512	53,363	279,257
	7 mos.	2,364	10,924,536	1,345,424	13,634,535	2,615,016	2,173,229	550,532	5,352,239	867,564	11,699,886	85.8	1,934,649	593,955	—64,220	225,282
Los Angeles & Salt Lake	July	1,229	1,315,043	411,267	2,002,281	245,448	328,177	77,234	615,407	83,790	1,427,393	71.3	574,888	440,077	298,026	278,074
	7 mos.	1,229	9,881,621	2,308,281	13,535,506	2,051,105	2,312,835	598,514	4,311,712	591,035	10,340,029	76.4	3,195,477	2,077,972	1,215,630	2,526,171
St. Joseph & Grand Island	July	258	295,776	7,455	314,907	54,015	40,756	3,153	104,712	18,131	222,382	70.6	92,525	74,249	47,005	29,691
	7 mos.	258	1,803,422	53,977	1,940,033	302,198	247,382	24,022	678,987	115,544	1,381,136	71.2	558,897	434,080	292,066	338,694
Utah	July	111	60,801	.....	61,156	18,275	23,304	370	18,213	5,753	65,915	107.8	—4,759	—8,706	—18,795	6,503
	7 mos.	111	813,403	.....	818,021	146,396	229,599	2,518	211,432	42,552	632,497	77.3	185,524	138,876	39,571	291,398
Virginian	July	561	1,238,452	21,943	1,339,052	150,043	256,632	14,621	283,408	35,656	739,176	55.2	599,876	449,874	511,415	726,473
	7 mos.	549	9,442,554	159,091	10,189,046	1,148,802	1,896,511	98,216	2,138,154	229,303	5,512,830	54.1	4,676,216	3,569,194	4,014,054	4,900,350
Wabash	July	2,523	4,194,478	453,860	5,939,615	674,734	809,136	189,271	1,953,044	227,730	3,874,407	76.9	1,165,208	1,024,450	697,513	1,152,755
	7 mos.	2,523	31,399,179	3,335,014	37,397,871	4,550,907	6,524,047	1,376,467	15,013,473	1,645,087	29,238,503	78.2	8,159,368	6,578,279	4,038,591	6,904,667
Ann Arbor	July	293	359,935	14,507	397,788	37,109	69,805	14,497	162,627	15,976	299,366	75.3	98,422	68,749	41,162	62,547
	7 mos.	293	2,747,783	82,841	2,933,429	275,688	585,489	102,069	1,230,965	102,116	2,295,111	78.2	638,318	452,661	271,058	582,524
Western Maryland	July	896	1,301,562	15,353	1,455,011	231,785	243,419	46,540	367,853	48,957	940,008	64.6	515,003	425,003	415,791	432,999
	7 mos.	894	9,763,627	112,060	10,470,929	1,512,910	1,948,453	312,066	2,804,016	305,987	6,898,810	65.9	3,572,119	2,952,119	3,055,986	2,932,847
Western Pacific	July	1,051	1,116,479	146,928	1,427,773	258,410	204,254	68,885	487,816	49,596	1,153,136	80.8	274,637	179,714	141,998	210,876
	7 mos.	1,051	6,908,363	661,687	8,233,546	2,044,151	1,663,349	496,432	3,244,917	343,835	8,040,078	97.7	193,468	—496,212	—336,187	902,754
Wheeling & Lake Erie	July	511	1,384,696	16,517	1,517,376	178,021	322,321	35,732	425,487	42,260	1,004,409	66.2	512,967	366,404	375,663	522,979
	7 mos.	511	9,711,380	115,219	10,514,718	1,176,362	2,525,982	266,442	3,047,444	316,423	7,340,897	69.8	3,173,821	2,222,245	2,264,522	3,143,181
Wichita Falls & Southern	July	203	79,540	226	84,405	15,293	9,453	2,641	26,206	3,739	55,850	66.17	28,555	23,088	15,916	24,003
	7 mos.	203	536,180	3,406	569,329	105,509	72,751	20,415	183,444	33,361	409,861	71.99	159,468	122,549	79,677	128,125

News of the Week

(*Continued from page 547*)

comparison. The railroads, as common carriers, are legally bound to furnish service to oil producers and the oil producing communities, notwithstanding that many of the lines directly serving oil fields are now operating at a financial loss to the carriers, and that this loss is likely to increase to larger proportions as pipe line carriers continue to divert this business from the railroads to themselves. This particular means of transportation, coupled with automobiles, motor busses and airships have and will continue to make greater inroads into the resources of the railroads, and unless curbed or halted are likely to undermine the financial structures of many of our railroad companies.

"The supposed economies and other claimed advantages of the pipe line as a means of transportation are of little value to the general public and in no way tend to compensate for the burdens and hardships imposed upon our employers and the members of our brotherhood."

The resolution concluded with a plea to the governmental and regulatory bodies of the several states holding jurisdiction over this matter, as well as the Interstate Commerce Commission, to take steps to discourage and prevent the further expansion of the pipe lines at the expense of the railroads. It also urged the legislative boards of the brotherhood, in oil producing states, to make the subject of the resolution a matter of prime consideration, and to take steps calculated to further its purpose.

I. C. C. Hearing on Purchase of Valley & Siletz

A hearing on the proposed purchase of the Valley & Siletz was held before Examiner T. F. Sullivan of the Interstate Commerce Commission at Portland, Ore., on September 3. The controversy over the purchase of this railroad, a 40-mile lumber line owned by the Cobbs & Mitchell Company, and extending from Independence, to the crest of the Coast Range mountains at Valsetz, involves the Southern Pacific, the Great Northern, the Northern Pacific and the Oregon Electric. In April, 1930, the Oregon Electric, which is controlled by the Great Northern and the Northern Pacific through the Spokane, Portland & Seattle, announced that it had contracted with the Cobbs & Mitchell Company to buy the Valley & Siletz and to build a 2½-mi. link, including a bridge over the Willamette river, to form a connection with the Oregon Electric at Oroville, Wash. When the Oregon Electric filed an application with the Interstate Commerce Commission for permission to make such purchase and extension, the Southern Pacific, which has enjoyed the Valley & Siletz business by virtue of the connection at Independence, filed a counter application asking that the petition of the Oregon Electric be denied and that the Southern Pacific be allowed to purchase the Valley & Siletz.

Representatives of the Oregon Electric appeared to show why that company should be permitted to purchase the line, while witnesses for the Southern Pacific supported the petition of the latter road. W. P. Ellis, attorney for the Oregon Public Service Commission, an intervener, suggested the possibility of joint ownership or joint operation of the Valley & Siletz by the Southern Pacific and the Oregon Electric. Witnesses for the Oregon Electric testified that acquisition of the Valley & Siletz will do much to increase the lumber carrying business of the Great Northern, the Northern Pacific and the Oregon Electric. The Oregon Electric, it was shown, has been suffering operating losses for the past 14 years, while Spokane, Portland & Seattle has not made earnings adequate for the investment in the facilities provided for its operation.

Paul Shoup, president of the Southern Pacific, testified that his road had authorized negotiations for the purchase of the Valley & Siletz in 1927 before the Oregon Electric entered into contract for such purchase. Traffic officers of the Southern Pacific were authorized to negotiate for the purchase of the line and in November, 1929, approached owners of the Valley & Siletz with negotiations for the purchase. In April, 1930, while the Southern Pacific was waiting for the owners of the line to resume negotiations, the Southern Pacific was advised of the contract of sale to the Oregon Electric.

Railroad Signalman Misquoted

The *Railway Age,* in the issue of August 30, page 459, carried a story which has since been found to be based on incorrect information, quoting A. E. Lyon, assistant to the grand president of the Brotherhood of Railroad Signalmen of America. This statement was given circulation following the meeting of the brotherhood at Denver, Colo., late in August, and was used in *Railway Age* under the heading "Signalmen's Officer Deplores Use of Strikes."

In a letter calling attention to the error, Mr. Lyon states:

"This entire item, from the first word to the last, is a false statement. No such statements were made by me, nor were they made by any other officer, delegate or visitor to the convention. The subject of strikes and their use was not even under discussion at any time and the information upon which your news item was based came from a purely imaginary source.

"An item along similar lines was published in one of the daily papers in Denver during the sessions of the convention. Upon investigation it developed that a newspaper reporter had 'used his imagination.' His story created amusement among the convention attendents who all knew that the subject of strikes had never been under discussion. However, when *Railway Age* circulates such a story, it ceases to be humorous.

"This is called to your attention because I believe it is not your policy or intention to knowingly give circulation to false statements or to misrepresent anyone's views."

Rules B. & O. Trainmaster Not in Contempt

Apparently taking the unsupported word of a switchman, a Chicago judge fined the terminal trainmaster of the Baltimore & Ohio Chicago Terminal $25 and sentenced him to 60 days in county jail for contempt to court. The case was appealed, and, after hearing the full evidence, the reviewing judge reversed the decision of the lower court, and freed the trainmaster of the charge.

The facts of the case, as brought out by the reviewing court, were that the switchman was summoned for jury service. Since he was on a day shift, he requested that he be permitted to bid in a night job on the third shift, so as not to interfere with his jury duties. This was done, as requested, but the switchman then began leaving the job an hour or two before his eight hour tour of duty was completed, stating that he could not otherwise report to the jury on time. The terminal trainmaster cautioned him that this could not be permitted, and suggested to him that, if he desired, he could bid in a second shift job, which would give him plenty of time to get ready before his duties as a juror began in the morning.

The switchman said that he would consider the matter, but continued to work on the third shift and continued also to leave the job from one to two hours before the expiration of his tour of duty.

Thereupon, after an investigation, he was dismissed from the service. Two days later, the switchman entered a complaint with the state's attorney and the terminal trainmaster was haled to court and summarily fined and sentenced to imprisonment.

The switchman announced at that time that he was being discriminated against because he was a "labor leader," and that he should have been permitted to lay off for the period of his jury service. During the re-hearing of the case, it developed that he had never requested that he be permitted to lay off. Therefore, the reviewing judge issued the opinion quoted in part below:

"Upon a careful consideration of all the evidence, we are clearly of the opinion that the judgment of the court finding the defendent guilty of contempt is against the manifest weight of the evidence. From the complaining witnesses' testimony, it clearly appears that while he was performing his service as a juror, he desired to continue working for the railroad, and it was at his own request that he was assigned to work on the night shift. He did not request nor did he want to be laid off. He had a right to demand to be changed to a night shift, and obviously he could not demand to work and then arbitrarily only work a part of the period. When he was told by the trainmaster that he

could have an early night shift, he said he would take the matter under advisement and admits that he never made any answer to the trainmaster or anyone else. The judgment of the Criminal Court of Cook County is against the manifest weight of the evidence and it is reversed."

Railway Earnings for July

Class I railroads for the first seven months this year had a net railway operating income of $458,943,343, which was at the annual rate of return of 3.64 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the seven months of 1929 their net was $686,391,088, or 5.56 per cent. Operating revenues for seven months totaled $3,148,700,980, compared with $3,626,465,518 for the same period last year, or a decrease of 13.2 per cent. Operating expenses amounted to $2,405,088,119, compared with $2,638,986,808 for the same period one year ago, a decrease of 8.9 per cent.

In the seven months the roads paid $213,064,188 in taxes, compared with $232,520,016 for the same period last year, a decrease of 8.4 per cent. For July the tax bill of the Class I railroads amounted to $31,658,421, a decrease of $3,665,503 under July of the previous year.

Twenty-four Class I railroads operated at a loss in the seven months of 1930, of which 7 were in the Eastern district, 3 in the Southern and 14 in the Western.

Net railway operating income by districts for the first seven months of 1930, with the percentage of return based on property investment on an annual basis was as follows:

New England Region...	$24,401,422	5.00%
Great Lakes Region....	81,296,679	3.41%
Central Eastern Region..	107,282,750	3.87%
Pocahontas Region.....	45,396,846	7.50%
Total Eastern District	258,377,697	4.13%
Total Southern District	48,643,822	2.68%
Northwestern Region....	33,014,752	2.46%
Central Western Region	78,112,785	3.71%
Southwestern Region....	40,794,287	3.64%
Total Western District.	151,921,824	3.33%
Total United States..	$458,943,343	6.64%

For July the net was $82,750,153, which, for that month, was at the rate of 3.76 per cent. In July last year, the net income was $123,824,669, or 5.76 per cent. Operating revenues for July amounted to $457,025,113, compared with $558,386,428 in July last year, a decrease of 18.2 per cent. Operating expenses totaled $331,561,565, compared with $389,257,584 in the same month in 1929, a decrease of 14.8 per cent.

Class I railroads in the Eastern district for seven months had a net of $258,377,697, at the rate of 4.13 per cent. For the same period in 1929, their net was $365,440,483, or 5.99 per cent. Operating revenues for seven months totaled $1,589,128,752, a decrease of 12.7 per cent, while operating expenses totaled $1,194,318,964, a decrease of 8.9 per cent. Class I railroads in the Eastern District for the month of July had a net of $39,049,360, compared with $61,311,019 in July, 1929.

In the Southern District for seven months the net was $48,643,822, at the rate of 2.68 per cent. For the same period in 1929, the net amounted to $77,446,902, at the rate of 4.31 per cent. Operating revenues in the Southern District for seven months amounted to $392,237,972, a decrease of 13.7 per cent while operating expenses totaled $311,375,919, a decrease of 9 per cent. Class I railroads in the Southern district for July had a net of $5,454,369, compared with $8,483,765 in July, 1929.

Class I railroads in the Western district for seven months had a net of $151,921,824, which was at the rate of 3.33 per cent. For the first seven months in 1929 the railroads in that district had a net of $243,503,703, at the rate of 5.47 per cent. Operating revenues for the seven months amounted to $1,167,334,256, a decrease of 13.6 per cent under the same period last year, while operating expenses totaled $899,393,236, a decrease of 8.8 per cent.

For July, the net of the Class I railroads in the Western district amounted to $38,246,424. The net of the same roads in July, 1929, totaled $54,029,885.

CLASS I RAILROADS—UNITED STATES

	1930	1929
Month of July		
Total operating revenues	$457,025,113	$558,386,428
Total operating expenses	331,561,565	389,257,584
Taxes	31,658,421	35,323,924
Net railway operating income	82,750,153	123,824,669
Operating ratio—per cent	72.55	69.71
Rate of return on property investment	3.76%	5.76%
Seven months ended July 31		
Total operating revenues	$3,148,700,980	$3,626,465,518
Total operating expenses	2,405,088,119	2,638,986,808
Taxes	213,064,188	232,520,016
Net railway operating income	458,943,343	686,391,088
Operating ratio—per cent	76.38	72.77
Rate of return on property investment	3.64%	5.56%

Union Cab Signals

The Union Switch & Signal Company, Swissvale, Pa., has issued its Bulletin No. 144, a pamphlet of 51 pages, describing its continuous cab signal as used on 15 railroads, together with maps and explanatory matter showing just what has been done on each of these roads in connection with this improvement. The mileage on each road is stated separately for the first and second installations, and the total length of road is 3,380 miles. All of the installations have been made in connection with automatic brake-setting apparatus, as ordered by the Interstate Commerce Commission, except those on 210 miles of the Pennsylvania, (147 miles additional under construction) 11 miles of the Central of New Jersey and 9 miles of the Richmond, Fredericksburg & Potomac.

The track now equipped for the operation of this system aggregates 6,748 miles and locomotives (trains) are operated more than 5,000,000 miles a month under the protection of the system. The number of locomotives equipped with the apparatus, including multiple-unit electric passenger cars, is 4,243.

Data concerning the different roads will be found tabulated in the list below. It will be noted that the system, the same in essentials on all of these roads, is installed under a considerable variety of different arrangements.

In the table the information for some of the roads is given in two items, a separate one for each of the two installations ordered by the Interstate Commerce Commission. The Pennsylvania, as is well known, is the largest user of this continuous system and it has 210 miles of road on which the cab signal system (without automatic stops or train control) is in use.

The signals within the cab are color-light on 14 roads, and position light on two roads; and on four roads the indication is given by letters; *H* for high speed, *M* for medium and *L* for low, the letters being illuminated by white light.

Two roads, the Boston & Maine, and the Long Island, use lights giving the indication both by color and position.

The letter *G* indicates green, proceed; *Y*, yellow, approach; and *R*, red, stop or run under control. In the fourth column of the table, showing color of lights, the letter *z* is used to indicate the use of two lights (green and yellow) to indicate approach-restricting.

One road, the New York, New Haven & Hartford, uses lunar white for the lowest speed indication. The Chicago, Milwaukee, St. Paul & Pacific uses white, green and red, instead of green, yellow and red.

On the Reading, electric passenger cars are equipped with cab signals without automotic stops. On the Atchison, Topeka & Santa Fe and on the Illinois Central, the cab signals are used without automatic visual block signals, no wayside cautionary signals being used.

Union Continuous Cab Signals in Use on American Railroads

	Number of Indications	Kind of Indication	Colors of Lights	Code System Used	Speed Control
Pennsylvania	4	Position Light	.....	Yes	..
Long Island	3	Color Light	G. Y. R.	Yes	..
Reading, 1st	4	Color Light	G. z. Y. R.	Yes	1
Reading, 2nd	3	Letters	H. M. L.	Yes	3
Richmond, F. & P.	3	Color Light	G. Y. R	....	2
Atchison, T. & S. F.	3	Letters	H. M. L.	....	3
Central N. J., 1st.	3	Letters	H. M. L.	....	3
Central N. J., 2nd.	4	Color Light	G. z. Y. R.	Yes	..
Delaware, L. & W.	2	Color Light	G. Y.	....	1
N. Y., N. H. & H., 1st.	2	Color Light	G. L-W.	....	..
N. Y., N. H. & H., 2nd.	4	Color Light	G. z. Y. L-W.	Yes	..
Norfolk & W., 1st.	3	Letters	H. M. L.	....	3
Norfolk & W., 2nd.	3	Letters	H. M. L.	....	2
Oregon-W. R. R. & N.	2	Color Light	G. R.	....	1
Union Pacific	2	Color Light	G. R.	....	1
Boston & Maine.	2	C. P. L.	G. R.	....	..
Chicago, M., St. P. & P.	3	Color Light	W. G. R.	....	..
Illinois Central	2	Color Light	G. R.	....	..
Louisville & N., 1st.	2	Color Light	G. R.	....	1
Louisville & N., 2nd.	2	Color Light	G. R.	....	..

Traffic

Shipments of cranberries from the Cape Cod cranberry meadows this year will probably amount, according to an estimate made by the New York, New Haven & Hartford, to 395,000 barrels. The total last year was 5,000 barrels more than this number.

A 92-car stock train carrying 10,000 sheep and 1,500 head of cattle was moved over the Northern Pacific from Laurel, Mont., to Minneapolis, Minn., where it arrived on September 6. The movement is the result of the improvement in prices and the beginning of the fall movement.

The Chicago, Milwaukee, St. Paul & Pacific on September 14, added the 28th passenger train to its service between Chicago and Milwaukee, Wis. The service now includes 14 trains in each direction. The new train leaves Chicago at 7:15 a.m. and arrives in Milwaukee at 9:00 a.m., the distance being 85 miles.

Railways Ask More Time to Establish Joint Rates With Barge Line

The railways that were required by a recent order of the Interstate Commerce Commission to join with the Mississippi Valley Barge Line in the establishment of through routes and joint rail and water rates between points in central territory and the South and Southwest via Cincinnati and New Orleans have petitioned the Interstate Commerce Commission for an extension for 60 days, or until November 30, of the effective date of the order because of the time required to make the necessarily large number of mileage computations and rate calculations.

Shipping Board Objects to Lower Rail Rates

The United States Shipping Board has filed with the Interstate Commerce Commission a statement of exceptions to the recent proposed report by Examiner W. A. Disque in which he recommended that the commission grant fourth section relief to enable the Southern Pacific to put into effect reduced rates over its Sunset-Gulf route to enable it to compete with water lines through the Panama canal. The statement of the Shipping Board declares that this would divert a large portion, if not all, of the intercoastal water traffic and thus cripple the water carriers, and would be in conflict with the declared purposes of the merchant marine acts and the Panama canal act.

Illinois Coal Rates

The selection of a committee of coal operators, railroad officers and consumers in Illinois to study freight rates and negotiate acceptable tariffs on Illinois coal was decided on as a means of settling the controversy between interested parties in the Illinois coal rate investigation being conducted by the Illinois Commerce Commission and the Interstate Commerce Commission. The decision was reached on September 5 at a conference called by R. N. Trezise, an examiner for the Interstate Commerce Commission, before whom the rate cases have been assigned. Mr. Trezise suggested that the operators, railroads and consumers indicate the basis they are willing to establish without an order from the commission. The shippers were also called upon to suggest the specific rates which, in their view, should be established, bearing in mind that the suggested rates should be in proper relationship to the rates of operators in competing fields.

Southeast Shippers' Board

The Southeast Shippers' Advisory Board, at its thirty-first regular meeting in Biloxi, Miss., on September 5, received reports from commodity committees carrying confident hopes that business will improve this fall.

The reports containing the estimates, for the last three months of 1930 as compared with 1929, when added up, for 23 basic industries, show an estimated decrease of six per cent. Brick, clay, etc., will fall off 15 per cent; citrus fruits, 10 per cent; coal and coke, 15 per cent; cotton, 20 per cent; grain, etc. 5 per cent; iron and steel, 20 per cent; lumber, etc., 12 per cent.

The cement industry expects an increase of three per cent; cotton seed and products, 15 per cent; sand, gravel, etc., 10 per cent; fresh vegetables, 10 per cent; petroleum, etc., three per cent; and textiles, five per cent.

Drought Relief Rates Applied to 902 Counties

The Secretary of Agriculture has continued from time to time to certify to the railroads lists of additional counties as those in which drought conditions exist to such an extent as to justify the application of the emergency reduced rates made by the railroads for shipments of feed in and livestock out. Up to September 9 the number of such counties certified and included in the embargo circulars of the Car Service Division as the basis for the issuance of permits allowing shipments at the reduced rates was 902 and the Secretary of Agriculture had certified some additional counties not up to that date included in the embargo. The later certifications were largely in western states. On that date reduced rates were applicable on shipments into or out of 36 counties in Alabama, 76 in Arkansas, 36 in Illinois, 40 in Indiana, 116 in Kentucky, 40 in Louisiana, 19 in Maryland, 73 in Mississippi, 76 in Missouri, 26 in Montana, 7 in North Carolina, 56 in Ohio, 60 in Oklahoma, 8 in Pennsylvania, 75 in Tennessee, 5 in Texas, 99 in Virginia, 49 in West Virginia, and 5 in Wyoming.

According to a statement issued by the Department of Agriculture, permits for shipment of feeds to drought-stricken areas totalling 3,733 carloads had been reported to Secretary Hyde as chairman of the Federal Drought Committee by M. I. Gormley, executive vice-president of the American Railway Association, up to September 3 and a week later the number had been increased to about 6,500. Of the first compilation, 1,254 carloads were for destinations in Virginia, 784 for West Virginia, 357 for Maryland, 72 for Pennsylvania, 611 for Ohio, 305 for Kentucky, 53 for Tennessee, 285 for Indiana, 7 for Illinois, 4 for Arkansas, and 1 for Mississippi. The permits were issued on certification by county agents that the feeds were needed because of conditions created by the drought.

Government Report on Lake Traffic

The United States Shipping Board, in cooperation with the Board of Engineers for Rivers and Harbors of the War Department, has issued a new volume entitled "Transportation on the Great Lakes," which constitutes one of a series of reports known as the "Transportation Series," dealing with transportation problems directly related to the functions of the Shipping Board and War Department.

This report contains a general description of the Great Lakes and their connecting channels and harbors, and gives information relative to treaties, laws and regulations governing navigation and traffic. Lake traffic has grown steadily since 1925, increasing from a little over 130 million tons in that year to almost 150 million tons in 1928. The twin ports of Duluth-Superior led all other ports in volume of tonnage handled during the period from 1919 to 1928, which was due mainly to the large shipments of iron ore. Buffalo ranked second, followed by Chicago, Ashtabula, Toledo, Cleveland, Conneaut, Calcite, Ashland, Milwaukee, Agate Bay, Lorain, Escanaba, Detroit, Sandusky, Gary, Indiana Harbor, Fairport, Erie and Ludington in the order named.

The year 1928 was the record year for the movement of grain on the lakes, a grand total of 572,282,575 bushels having moved from upper lake ports to lower lake and St. Lawrence River ports and some direct to Europe. The ore shipments in 1928 amounted to 53,980,874 gross tons, constituting nearly 40 per cent of the total lake traffic.

Coal moving from the mines in Pennsylvania, Ohio, Virginia, West Virginia, Tennessee and Kentucky, amounting to 37,323,524 tons in 1928, is traced to ports of loading on Lake Erie, Lake Ontario and the St. Lawrence River. The report contains many illustrations of the principal grain elevators, bulk freight terminals, and various types of vessels employed in lake traffic.

Foreign Railways

F. M. Townsend Appointed to Nicaraguan Post

F. M. Townsend, who was formerly connected with the Southern Pacific of Mexico, and more recently locating engineer on the Bucaramanga-Rio Fonce section of the Central Northern Railroad of Colombia, has been appointed general manager of the Pacific Railroad of Nicaragua, with headquarters at Managua, Nicaragua. Mr. Townsend left the Southern Pacific of Mexico in April, 1926, to become supervising engineer of the Soyopango-Texistepeque line of the International Railways of Central America, Salvador division, and subsequently joined the service of the Colombian railway. His new position gives him jurisdiction over a system approximately 150 miles in length, serving the west coast of Nicaragua.

Roger Gibb Becomes Chairman of Rhodesian Commission

Roger Gibb, assistant to the assistant goods manager (rates) of the Great Western of Great Britain, has been appointed chairman of the Rhodesian Railway Commission to succeed the late Sir William Hoy, who died early in February as reported in *Railway Age* of March 15, page 662. In the interim since Sir William's death P. E. Potter has acted as chairman.

Mr. Gibb, prior to his association with the Great Western, spent some time in the service of American railroads. He studied transportation at McGill University, Montreal, and during vacations there was employed on the Canadian Pacific and the Chesapeake & Ohio. In 1908, he entered the service of the Great Western in the general manager's office, but resigned the following year to study law. He returned to the Great Western in 1921 and has since been in its employ.

Second Class Fares Abolished on Great Southern

Effective July 1, according to Modern Transport (London), second class passenger service has been abandoned on all lines of the Great Southern Railway of Ireland. The company's order, which changes its entire schedule of passenger rates, modifies in some respects an order made last January by the Railway Tribunal, and eliminates on the Great Southern's entire system the second class service which had been abolished on some of its branch lines for some time previous to July 1.

The new basic charges for first and third class passengers also represent a considerable reduction from the old fares, the new first class fare being only 2¼d. (4.5 cents) per mile as against 3¼d. (6.5 cents) under the former schedule. Third class fares have been reduced from 1¾d. (3.5 cents) to 1½d. (3 cents) per mile. The new rate scale also fixes rates for weekly tickets, as well as for those good for one, three, six and 12 months. The charges are made on a mileage basis, the minimum for one mile for one year being £6 first class and £4 third class, while for 30 miles for the same period the rates are £41 5s. ($200.46) and £27 10s. ($133.62), respectively.

Non-Stop Runs on the Continent

The Northern of France, in connection with the exposition at Liege, Belgium, now runs an express train through between Paris and Liege, 228 miles, in both directions, in four hours, at an average speed of 57 miles an hour; and because of the necessity of more moderate speed on the Belgian section of the line, the speed over the 149 miles in France is about 60 m.p.h. This is one item, says the Railway Gazette (London) in a general increase in the number of non-stop runs on continental railroads, the movement being stimulated probably by the competition of airplane lines. On the same road, the run of 193 miles between Paris and Brussels, is covered four times daily in three hours, 30 minutes. Also, the run between Paris and Dunkerque, 189 miles, is made in 205 minutes and that between Paris and Calais, 184½ miles, is made twice a day in 190 minutes.

The Eastern of France has three non-stop runs between Paris and Nancy, 219 miles; three between Troyes and Belfort, 171½ miles, and five between Paris and Bar-le-Duc, 157½ miles. And, it is said that none of these roads have track tanks.

The State Railroad has track tanks on its line between Paris and Saumur, 177½ miles, between which points trains are run without a stop.

The German railroads run four trains daily without a stop between Berlin and Hamburg, 178 miles, in 194 minutes.

"Turk-Sib" Railway Finds Operation Difficult

Although only a few months have passed since the new Turkestan-Siberian Railway was opened with impressive ceremonies by the Soviet government, as announced in the *Railway Age* of May 10, page 1155, the new line is said to be running into operating difficulties which threaten the maintenance of regular traffic, according to a dispatch to the London Times from its Riga (Latvia) correspondent.

Laying of rail for the new road, built to connect Semipalatinsk in Siberia with Tashkent in Central Asia, was completed by the Soviet in April of this year, at a cost of nearly $100,000,000, bringing to completion a line which represented a remarkable engineering achievement, and possessed considerable military and economic value, because of its proximity to the Chinese frontier and the possibility which it held of furnishing an outlet for the cotton and other products of Central Asia.

Now, however, the report states, Comrade Kustoff, chairman of the trade union organization of the railway, has sent an urgent appeal to Moscow to rescue it from neglect and disorder. With rail laid, but with some of the auxiliary facilities still incomplete, the correspondent continues, the railway appears to have been forgotten by its management. Skilled workmen are deserting the line in great numbers, the dispatch adds, and except for irregular deliveries, the supply of materials has ceased, while privations due to uncertain food supply have lowered the morale of the employees. Plans for providing living accommodations for the workmen are also behind schedule, according to reports, partly because of the lack of timber and nails.

Argentine Railways Plan New Construction

Extensive plans for new railway construction to be undertaken by the State Railway Administration of the Argentine Republic at a total estimated cost of nearly 20,000,000 paper pesos, or approximately $8,400,000, have recently been approved, according to reports received by the Department of Commerce. The various new lines which are under consideration, together with the amounts to be spent on each, are shown in the following table:

Federal to Concordia	$1,908,489
Federal to Curuzu Cuatia	707,121
Curuzu Cuatia to Paso de los Libres	1,055,189
La Paz to Feliciano and San Jaime	1,680,000
Esquina to Sauce and Cuzuru Cuatia	1,197,000
Catamarca to Tacuman	504,000
Catamarca to Yacuiba	420,000
San Antonio to Patagones	630,000
Madryn to 16 de Octubre (Chubut) (Meter gage)	294,000

On the last named line, from Madryn to 16 de Octubre, 242 kilometers (approximately 150 miles) have already been completed and opened to traffic as far as Las Plumas. The part to be constructed under the new appropriation will cross the Chubut river about 20 kilometers (12.4 miles) below Paso des Indios, and will traverse the districts of Pampa de Agna, Quichaura, Tecka and Esquel, providing these important livestock zones with easy and economical transportation from the interior to the Atlantic seaboard.

In addition to the projects listed above, 14,000,000 pesos ($5,880,000) are to be set aside for the construction of a line from Maria Grande to Parana.

Reorganization of Rumanian Railways

According to data received by the Department of Commerce from Consul J. R. Childs, Bucharest, Rumania, a general reorganization of the Rumanian State Railways is now in progress under the terms of a new Railway Ad-

ministration law passed by the Rumanian Parliament in June, 1929. The main features of the new measure, which are in accord with the views of the National Peasant Party (in power when the law was voted), are actual autonomous management, extension of the powers of the Council of Administration, decentralized administration and radical financial reform with adequate financial control.

Up to the end of 1929, the principal accomplishments under the reorganization bill are listed by Consul Childs as follows: (1) A detailed list of all new railway lines required to provide adequate transportation for the country was drawn up; (2) Active work was begun on a revision of the entire railway accounting system; (3) The railway budget was drafted in an entirely new form corresponding to that of any commercial undertaking; (4) All purchases of material were centralized in a single department with the object of eliminating waste, political influence and corruption; (5) More efficient utilization of rolling stock and a general increase in the capacity of freight trains were attempted; (6) The regional directorates were reduced in number from 15 to 8, and (7) The powers and responsibilities of the subordinate staff were extended with a view to a practical application of the policy of decentralization inaugurated by the new law.

Physical improvements to Rumanian railways during 1929 included the renewal of trackage on a distance of 335 kilometers (207 miles) on the lines from Predeal to Oradea, Orsova to Caransebes, Barlosi to Iasi, Bucharest to Fetesti and Pitesti to Piatra Olt; extension of the Bucharest stations, and completion of new repair shops at Grivitza, near Bucharest.

As brought out in a report of Rumanian railway operations for the year 1929 published in the *Railway Age* of May 17, page 1209, the government railways of that country have been operating at a heavy financial loss, as well as with declining traffic, for a number of years. The present reorganization bill constitutes an attempt to remedy these conditions, and is one of many proposals submitted toward that end. Among other measures suggested at various times to improve the condition of the railways is the formation of an independent operating company, 50 per cent of the stock to be held by the government and 50 per cent to be sold, the proceeds being devoted to physical improvement of the lines.

THE EXPLOSION OF A LOCOMOTIVE boiler at the yard of the Reading, at Third street and Erie avenue, Philadelphia, on September 9, resulted in the death of six employees and the injury of ten others. The locomotive, used as a pusher on the New York division, had just been moved out of the engine house preparatory to starting on its run, and had just been stopped to have some repairs made on the injector, when the explosion occurred.

Equipment and Supplies

Locomotives

THE LEHIGH & NEW ENGLAND has ordered from the Baldwin Locomotive Works two locomotives of the 2-10-0 type to have 30 by 32-in. cylinders, 61-in. driving wheels and a tractive force of 106,200 lbs. and three switching locomotives to have 27 by 30-in. cylinders. 57-in. driving wheels and a tractive force of 68,500 lb. An order has also been given to the Bethlehem Steel Company for 6 auxiliary locomotives. Inquiry for this equipment was reported in the *Railway Age* of July 19.

Freight Cars

THE PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, Pa., is inquiring for three to five tank cars. These cars will be used for carrying acid.

THE LEHIGH & NEW ENGLAND has ordered 300 steel box cars of 50 tons' capacity and five, eight-wheel steel caboose cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of July 19.

Iron and Steel

THE BOSTON & MAINE has received bids on 100 tons of steel for signal bridges.

THE CHICAGO & ALTON is inquiring for 100 tons of structural steel for a bridge at Alton, Ill.

THE ERIE has received bids on 300 tons of steel for bridges at Beaver Lake and Ridgefield Park, N. J.

THE NEW YORK, NEW HAVEN & HARTFORD has taken bids on 120 tons of steel for work at Noank, Conn.

THE PENNSYLVANIA has received bids on 200 tons of steel for repairs to a bridge at New Brunswick, N. J.

THE READING contract for 30,000 tons of 130-lb. rail will be divided between the Bethlehem Steel Company and the Carnegie Steel Company.

THE CANADIAN PACIFIC has ordered 2,100 tons of steel for bridges on its Moosehead division in Maine from the Bethlehem Steel Company.

THE NEW YORK CENTRAL has ordered through Babor-Comeau & Company, Inc., general contractors, 750 tons of steel for a warehouse at West End avenue between Sixty-second and Sixty-fourth streets, New York City.

Signaling

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company an electric interlocking for Downers Grove, Ill., 31 working levers. Color-light signals will be used.

THE GULF, COLORADO & SANTA FE has ordered from the General Railway Signal Company an electric interlocking, 21 working levers, for Gainesville, Tex. Color-light signals, type SA, will be used.

Miscellaneous

THE NEW YORK, NEW HAVEN & HARTFORD has received from the Bethlehem Shipbuilding Corporation two new steel car floats each carrying three tracks to have a total capacity of twenty 42-ft. cars. These are to be used in freight service in New York harbor between Bay Ridge, (Brooklyn) N. Y. and the Pennsylvania terminal at Greenville, N. J. They are 342 ft. 2½ in. long and 42 ft. 2½ in. wide.

* * * *



Flowers in Germany
Signal Station near Peine, on the German Railways

Supply Trade

The Ramapo-Ajax Corporation has awarded a general contract to the Missouri Bridge & Iron Company for the construction of a one-story addition to its plant at St. Louis, Mo., to cost $25,000.

Frank Parker, vice-president and general manager of **Briggs & Turivas,** Blue Island, Ill., has resigned and has organized **Iron & Steel Products, Inc.,** with offices in the Railway Exchange building, Chicago.

Guy Gregory, New England representative of **Oakite Products Incorporated** has left the service of that company and is now general sales manager of **Colloidal Phosphate Sales Company of New England,** 126 Newbury street, Boston, Mass.

Harry T. Gilbert, vice-president in charge of sales of the **Republic Steel Corporation,** has been appointed assistant to the president, with headquarters at Youngstown, Ohio, and has been succeeded by **Norris J. Clark,** vice-president and chairman of the executive committee of the Lamson & Sessions Company, Cleveland, Ohio.

The J. G. Brill Company, Philadelphia, Pa., and the **Cummings Car & Coach Company,** Chicago, have entered into a plan of affiliation whereby the Brill Company will center its manufacturing for the western district in the plant of the Cummings Company at Paris, Ill. Walter J. Cummings, president of the Cummings Company has been made a vice-president and director of the Brill Company and will have charge of western operations.

John M. Mulholland, who has been promoted to vice-president in charge of sales of the **O. F. Jordan Company,**



John M. Mulholland

East Chicago, Ind., was born at Pittston, Pa., and attended the University of Michigan from 1906 to 1910. Following his graduation, he studied as an apprentice in marine engineering with the Craig Shipbuilding Company, Long Beach, Cal., and later engaged in mining engineering in the southwest and in Mexico. From 1913 to 1915 he was in South America as a mining engineer with the Bolivia Exploration Company. Later be became connected with the engineering department of the Liquid Carbonic Company, Chicago, and then entered military service being assigned to the officers' training school, tank corps, at Camp Colt. From 1919 to 1923, he was district sales manager of Mudge & Company, and from 1923 to 1928 he was identified with the oil equipment business, with headquarters at St. Louis, Mo., and Cleveland, Ohio. In the latter year he became connected with the sales department of the O. F. Jordan Company as representative, which position he has held until his recent promotion.

Trade Publications

COALING AND SANDING PLANTS. — The Roberts & Schaefer Company, Chicago, has just issued its Bulletin No. 130, which describes some of the special features of the 2,000-ton six-track automatic coal and sand-handling plant which it completed recently for the Boston & Maine at Boston, Mass. Other features of Roberts & Schaefer coal- and sand-handling equipment are also described and illustrated.

STATIC TESTING MACHINE.—The Waugh Equipment Company, New York, recently issued a 12-page pamphlet describing the million-pound, static testing machine which is a part of the Waugh-Gould testing laboratories. The machine, which is hydraulically operated and is capable of exerting a pressure of one million pounds, has an overall height of 37 ft. It is adapted for all forms of tension, compression and transverse testing. The pamphlet contains a complete description of the machine, its operation and the accurate instruments provided for indicating the load and travel throughout the tests.

EMULSIFIED ASPHALTS AND ASPHALT-BASE ALUMINUM COATING. — Two bulletins have been issued by the Headley Emulsified Products Company, Philadelphia, Pa., one of which, No. 330, with 27 pages, describes fully the character and quality of Headley emulsified asphalts for waterproofing, dampproofing and general protective coatings, and includes a large number of illustrated examples of the various uses of emulsified asphalt. The other bulletin, No. 430, consisting of 11 pages, describes thoroughly the character and advantages of Headley asphalt-base aluminum coating, a new product recently put on the market.

THE SOCIETY OF ELEVATOR SUPERINTENDENTS OF NORTH AMERICA, which recently met at Chicago, is a newly organized society composed of superintendents of some of the larger grain elevators in the United States and Canada. The first president of the socitey is C. E. Wood, Baltimore, Md., superintendent of elevators of the Baltimore & Ohio.

Construction

ALGOMA CENTRAL & HUDSON BAY.—A contract for dredging a harbor at Michipicoten, Ont., and constructing a 310-ft. extension to the present coal dock has been awarded to A. B. McLean & Son, Sault Ste. Marie, Ont. The cost of this work is estimated at $250,000.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Robert E. McKee, Los Angeles, Cal., for the construction of grade separation structures at the intersections of the tracks of this company and Avenues Nineteen, Twenty and Twenty-six at Los Angeles. A contract for the construction for the Santa Fe Coast Lines Hospital Association of a three-story reinforced concrete building which will serve as a nurses' residence at Los Angeles has been let to the Lynch Construction Company, Los Angeles. Foundations for a highway subway under the tracks of this company at Wasco, Cal., will be constructed by the W. A. Bechtel Company, San Francisco, Cal. A contract for the construction of a 310-ton reinforced concrete coaling station at Grants, N. M., has been let to Fairbanks, Morse & Co., Chicago.

BOSTON & MAINE.—Contracts have recently been let by this company for the installation, at Boston, Mass., of four two-track, single leaf, rolling lift bridges, ranging in length from 87 ft. 9 in. to 118 ft. The substructure for the new bridges is to be placed by Stuart & Sons Company, Watertown, Mass.; the superstructure erected by the Phoenix Bridge Company, Phoenixville, Pa., and the electrical operating equipment furnished and installed by the Norwood-Norwood Company, Chicago. The total amount involved in all three contracts is in the neighborhood of $1,000,000. As reported in the *Railway Age* of August 30, page 466, these four bridges, spanning the Charles river at the approaches to the North station, will replace three existing timber drawbridges; and form a major part of the Boston & Maine's general $4,000,000 program of improving the approaches to its new passenger terminal development.

CHESAPEAKE & OHIO.—The Campbell County circuit court has entered an order requiring this road to construct a highway subway under its tracks at Pendleton avenue, Bellevue, Ky. The cost of this grade separation project is estimated at $88,000.

CHICAGO, BURLINGTON & QUINCY—CHICAGO & NORTH WESTERN.—The state of Wyoming has filed a complaint with the Interstate Commerce Commission asking it to require these companies to build an extension from either of their parallel main lines in Fremont county, Wyo., to the Riverton project of the United States Reclamation Service and to connect their lines by 2.5 miles of new construction between Bonneville on the

Burlington and Shoshoni on the North Western. Several routes, ranging from 22 to 30 miles, are suggested for the extension.

DELAWARE & HUDSON.—The Public Service Commission of New York has advised this company that it does not consider excessive the bid of $37,944 submitted by the Peckham Construction Company, Buffalo, N. Y., for work covering the elimination of its Coopersville station crossing on the Chazy-Rouses Point state highway in Champlain, N. Y. The Commission has also approved a general plan and an estimate of cost totaling $284,976, exclusive of land and damages, for the elimination of the Mill road, Ft. Hunter road and Campbell avenue grade crossings in Rotterdam and Schenectady, N. Y.

DELAWARE & HUDSON.—The Public Service Commission of New York has advised this company that it does not consider excessive the bids of $70,878 submitted by Scott Brothers Construction Company, Rome, N. Y., for work in connection with the elimination of its Warren street crossing on the Sandy Hill-Glens Falls county highway in the town of Queensbury, N. Y., and of $95,516 submitted by the Peckham Construction Company, Buffalo, N. Y., for work covering the elimination of its Curriers crossing located on the Curriers Corners-Fort Amherst county highway south of Port Henry station, Crown point, N. Y. The railroad has been directed to award the necessary contracts and begin work as soon as practicable.

GENESEE & WYOMING.—The Public Service Commission of New York has approved plans and an estimate of cost amounting to $58,000, exclusive of land and damages, in connection with reconstruction of the existing structure carrying the Pavilion-Greigsville highway over this company's tracks in the town of York, N. Y.

GOODYEAR YELLOW PINE COMPANY.—A contract for the clearing of the right of way and the grading for the construction of eight miles of railroad north of Picayune, Miss., has been awarded to G. H. Williams, Picayune. The entire project will consist of a line from Picayune to a point 18 miles northeast.

GULF & WEST TEXAS.—The Interstate Commerce Commission has extended the time for the beginning and completion of construction of the line between Fredericksburg and Brady, Tex., authorized in a certificate issued on January 7, 1930, to April 1, 1931, and March 31, 1933, respectively.

KANSAS CITY TERMINAL.—A contract has been let to the J. W. McMurry Contracting Company, Kansas City, Mo., for the construction of the substructure, including concrete piles, retaining walls, piers and column pedestals, of a grade separation structure at Oak street, Kansas City.

LEHIGH VALLEY.—The Public Service Commission of New York has designated for elimination the Twogoods, Halls and Bulls crossings of this company's lines, all located about two miles west of Clockville station in the town of Lincoln, N. Y. The crossings are to be eliminated by closing them and diverting traffic over a lateral highway to be constructed on the northerly side of the railroad, substantially in accordance with a plan submitted by the company.

LOS ANGELES & SALT LAKE.—A contract has been awarded to the Merritt-Chapman & Scott Corporation, San Pedro, Cal., for grading, bridging and construction of culverts for a new line which will extend from a point 2.2 miles west of Bracken, Nev., to the summit of the proposed Boulder Dam on the Colorado river.

NEW YORK CENTRAL.—The New York Public Service Commission has granted petitions of Niagara county asking for increases in the width of grade separation structures to be built by this company at its Military road crossing, Niagara Falls, N. Y., and at its crossing of the Sonborne-Lockport road, Cambria, N. Y. The additional width to be provided in both cases will increase the total cost of the two grade separation projects by $65,600, most of which will be paid for by the county.

NEW YORK CENTRAL.—Within the past few weeks, this company has let contracts to seven different New York contractors for as many construction projects of various types, all located in New York City. Details of the contracts are as follows: Paving and other work at the Thirtieth street yard, William J. Fitzgerald; covering openings and strengthening the roof of the Park avenue tunnel between Eighty-Sixth and Ninety-Sixth streets, H. H. Sherwin & Company, Inc.; foundations for city structure No. 2, from West Fifty-Ninth to West Seventy-Second street, Senior & Palmer, Inc.; foundations for a new warehouse at West End avenue between Sixty-Second and Sixty-Fourth streets, Babor-Comeau & Company, Inc.; construction of substation No. 11, at West One Hundred and Thirty-Fourth street, Miller-Blyth, Inc.; construction of substation No. 12 at West Sixty-Sixth street, Aronberg-Fried Company, Inc., and installation of duct lines and splicing chambers between One Hundred and Twenty-Fourth and One Hundred and Thirty-Seventh streets, Edward J. Duffy Company, Inc.

SEABOARD AIR LINE.—This company is building a steel viaduct over the Appomattox river at Petersburg, Va., to replace an existing wood and steel bridge at that location. A contract for the foundations and substructure of the new bridge has been let to the Cornell-Young Company of Macon, Ga., while the superstructure will be built by the American Bridge Company. The new viaduct is to be completed in November or December of the year. The work of removing about 5,000 cu. yd. of earth in connection with the construction of an underpass at South street, Petersburg, is also progressing under contracts with Gresham & Ware and W. W. Winfree.

Financial

CHESAPEAKE BEACH.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $750,000 of 20-year 6 per cent sinking fund bonds, $500,000 of equipment trust certificates and $600,000 of 20-year 6 per cent second mortgage bonds, the proceeds to be used in connection with the establishment of a ferry service across Chesapeake Bay and in the rehabilitation of the company's property.

CINCINNATI UNION TERMINAL.—*Securities.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $12,000,000 of its first mortgage 4½ per cent series A bonds, these bonds to be held in its treasury, and $15,000,000 of short term notes, the latter to be sold at not less than par.

GEORGIA & FLORIDA.—*Abandonment.*—Examiner Molster of the Interstate Commerce Commission, in a proposed report, has recommended that the commission authorize the abandonment of parts of the Millen branch, from Millen to Garfield, Ga., 14.1 miles, and from Graymont to Pendleton, Ga., 22.5 miles.

MISSOURI PACIFIC.—*Unification Case.*—The Missouri-Kansas-Texas has filed with the Interstate Commerce Commission a petition somewhat similar to that filed by the Kansas City Southern asking the commission to reconsider its decision conditionally authorizing the Missouri Pacific to lease the properties of 22 subsidiary and affiliated companies, with particular reference to the maintenance of existing routes.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Final Valuation.*—The Interstate Commerce Commission has issued a final valuation report as of 1916 finding the final value for rate-making purposes of the property owned and used for common-carrier purposes to be $45,400,000 and that of the property used but not owned to be $24,445,395. The final value of the property owned by the Western & Atlantic was placed at $16,616,321.

NEW YORK CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line between Prospect Junction, N. Y., and Hinkley, 2.4 miles.

NORFOLK & WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a 1.7-mile branch line extending from Creek Jct., Washington Co., Va., to Grassy Ridge and to abandon the 1.7-mile line of the White Top Ry. from the latter point to Konnarock.

OREGON SHORT LINE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a branch line from Blazon Junction to Cumberland, Wyo., 7.41 miles.

PENNSYLVANIA.—*Control of New England Railroads.*—General W. W. Atterbury, president of this company, has emphatically denied reports to the effect that the company had purchased either directly or indirectly large stock holdings in the Maine Central and the Bangor & Aroostook. Neither the Pennsylvania nor the Pennroad Corporation, he said, have purchased any such stock.

ST. LOUIS-SAN FRANCISCO.—*Bonds.*—Speyer & Co., J. & W. Seligman & Co., and Guaranty Company of New York have purchased from this company subject to the approval of the Interstate Commerce Commission, $10,000,000 of its consolidated mortgage 4½ per cent bonds, Series A, due March 1, 1978. It is understood that the bonds have been placed privately with institutions and bond dealers at 92¾ and interest, to yield 4.90 per cent and no general offering of the bonds will be made. The proceeds of these Bonds will be used to reimburse the Company for capital expenditures heretofore made.

SOUTHERN PACIFIC.—*Acquisition of St. L. S. W.*—The Missouri-Kansas-Texas has applied to the Interstate Commerce Commission for permission to intervene in the proceedings on this company's application for authority to acquire control of the St. Louis Southwestern.

Average Prices of Stocks and of Bonds

	Sept. 9	Last week	Last year
Average price of 20 representative railway stocks.	115.81	115.40	158.44
Average price of 20 representative railway bonds..	95.71	95.53	89.61

Dividends Declared

Chicago & North Western.—Common, $1.25, quarterly; Preferred, $1.75, quarterly, both payable September 30 to holders of record September 15.

Lehigh Valley.—Common, $.87½, quarterly; Preferred, $1.25, quarterly, both payable October 1 to holders of record September 13.

Wabash.—Preferred A, 1¼ per cent, quarterly, payable November 25 to holders of record October 25.

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The Boston & Maine's "Pine Tree Limited" at Revere, Mass.

Railway Officers

Executive

W. H. Gilman, master mechanic of the Santa Fe Northwestern and the Santa Fe, San Juan & Northern, has been elected vice-president in charge of operations of those railroads, with headquarters as before at Bernalillo, N. M.

Charles E. Carlson, who has been elected president of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn., has been connected with that road for more than 30 years. He was born at Dalby, Sweden, on August 16, 1874, and entered railway service in October, 1895, as a stenographer on the St. Paul & Duluth (now a part of the Northern Pacific) at Duluth. During the following five years he held various clerical positions in the freight department of the St. Paul & Duluth, en-



Charles E. Carlson

tering the service of the Duluth, Missabe & Northern in February, 1900, as a clerk. Until 1906 Mr. Carlson occupied clerical positions on the D., M. & N. in the offices of the auditor and the general freight and passenger agent. He was then appointed secretary to the first vice-president and in 1912 he became secretary to the president. In September of the latter year he was elected secretary of the D., M. & N., a position he held until his further election as first vice-president in July, 1920. Mr. Carlson's election as president of the Duluth, Missabe & Northern became effective on September 1.

Elbert H. Dresser, who has been elected vice-president and chief engineer of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn., has been engaged in railway service for 21 years. He was born at Jefferson, Iowa, on October 9, 1878, and obtained his engineering education at Rensselaer Polytechnic Institute. In September, 1899, Mr. Dresser entered railway service in the engineering department of the D. M. & N., later being promoted to division engineer. He left railway service in 1918 to engage in the United States forces during the world war, returning to civil life in 1919 in the contracting business in Texas. In 1920 he became president of the Polaris Prod-



Elbert H. Dresser

ucts Company and on January 16, 1928, he was appointed chief engineer of the Duluth, Missabe & Northern, with headquarters at Duluth. Mr. Dresser's election as vice-president and chief engineer of the D., M. & N. became effective on September 1.

Financial, Legal and Accounting

J. P. Tonolli has been appointed ticket auditor of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., succeeding **Alexander A. Smith,** deceased.

Operating

W. H. Rumberger, passenger trainmaster on the Renovo division of the Pennsylvania, has retired from active duty under the pension rules of the company.

M. O. Armstrong, trainmaster of the Atlanta division of the Nashville Chattanooga & St. Louis, has been transferred to the Nashville division at Nashville, Tenn.

H. E. Shumway, chief dispatcher on the Union Pacific at Grand Island, Neb., has been promoted to trainmaster at that point, succeeding **F. M. Kelly,** who has been transferred to Topeka, Kan.

L. A. Gregory, acting superintendent of the De Quincy division of the Missouri Pacific Lines, has been promoted to superintendent of that division, with headquarters as before at De Quincy, La.

Stephen F. Lynch, assistant trainmaster on the Vicksburg Route division of the Illinois Central, has been promoted to trainmaster of the Meridian

district and the Vicksburg terminal of that division at Vicksburg, Miss.

The headquarters of **J. M. Baths,** general superintendent of the Chicago Great Western, have been moved from Oelwein, Iowa, to Chicago. **E. W. Fowler,** assistant general superintendent, with headquarters at Oelwein, has been appointed superintendent of the Iowa division, with headquarters at Des Moines, Iowa, succeeding **C. J. Foster,** who has been appointed assistant superintendent of the Iowa division at Des Moines.

David E. Nichols, assistant to the general superintendent of the Central district of the Northern Pacific, has been appointed trainmaster on the Montana division at Livingston, Mont., and the position formerly occupied by Mr. Nichols has been abolished. Mr. Nichols succeeds **Thomas Summers** who has been transferred to the Idaho division at Spokane, Wash., succeeding **Courtland P. Hunt** who has been granted a leave of absence.

Traffic

Charles M. Gosnell, division freight agent of the Baltimore & Ohio, has been appointed assistant general freight agent with headquarters as before at Baltimore, Md.

C. E. Conner has been appointed assistant to the general traffic manager of the Missouri & North Arkansas, with headquarters at Kansas City, Mo.

A. J. Keller has been appointed coal freight agent of the Chicago, Milwaukee, St. Paul & Pacific at Chicago, succeeding **L. F. Malum,** who resigned on September 1.

H. T. Lucas, traveling freight agent for the Chicago, Rock Island & Pacific at Houston, Tex., has been promoted to general agent in the freight department at Houston, succeeding **H. C. Callahan,** deceased.

Evan W. Hall, agricultural agent on the Chicago, Milwaukee, St. Paul & Pacific at Aberdeen, S. D., has been appointed assistant commissioner of agricultural development and colonization, with headquarters at Chicago.

R. L. McKee has been appointed acting general freight and passenger agent of the Louisiana, Arkansas & Texas, with headquarters at Greenville, Tex., replacing **R. H. Ragan,** resigned.

W. S. Merchant, general eastern agent of the St. Louis-San Francisco at New York, has been promoted to passenger traffic manager with headquarters at St. Louis, Mo., succeeding **J. W. Nourse** who has been appointed general passenger agent at St. Louis. **H. F. Sanborn,** general agent at Chicago has been appointed general eastern agent at New York, replacing Mr. Merchant. **W. B. Wells,** assistant traffic manager at St. Louis has been appointed general agent at Chicago to succeed Mr. Sanborn.

Engineering, Maintenance of Way and Signaling

W. S. Wilson, division engineer of the former Allegheny division of the Pennsylvania at Oil City, Pa., has been transferred to the Monongahela division at Uniontown, Pa.

H. M. Stout, record engineer of the Northern Pacific, has been appointed assistant valuation engineer, with headquarters as before at St. Paul, Minn., following the abolition of the office of record engineer on September 5.

J. M. Trissal, assistant engineer on the Chicago Terminal Improvement of the Illinois Central, has been promoted to assistant electrical engineer, fixed properties, of the Illinois Central, with headquarters at Chicago.

A. W. White, assistant division engineer on the Chesapeake & Ohio at Ashland, Ky., has been promoted to division engineer of the Richmond division, with headquarters at Richmond, Va., succeeding **T. H. Greene,** who resigned on September 8.

The headquarters of **J. B. McClain,** engineer of bridges of the Seaboard Air Line, have been removed from Savannah, Ga., to Norfolk, Va., coincident with the transfer of engineering and operating headquarters to the same point, as announced previously in these columns.

Mechanical

T. C. Carter, master mechanic on the International-Great Northern at Houston, Tex., has been promoted to superintendent of motive power, with headquarters at Palestine, Tex.

R. B. Green, general foreman of locomotive repairs on the Chicago, Burlington & Quincy at St. Joseph, Mo., has been appointed master mechanic of the Toledo, Peoria & Western, with headquarters at Peoria, Ill.

Special

Robert S. Binkerd, formerly vice-chairman of committee on public relations of the eastern railroads, has joined in the formation of Whitney, Binkerd & Co., Inc., 120 Wall street, New York City. The new firm will engage in the financing of certain controlled interests and otherwise conduct an investment banking and management business.

Obituary

M. F. Lewis, trainmaster of the Grand Rapids division of the Pennsylvania, died in a hospital at Grand Rapids, Mich., on August 29.

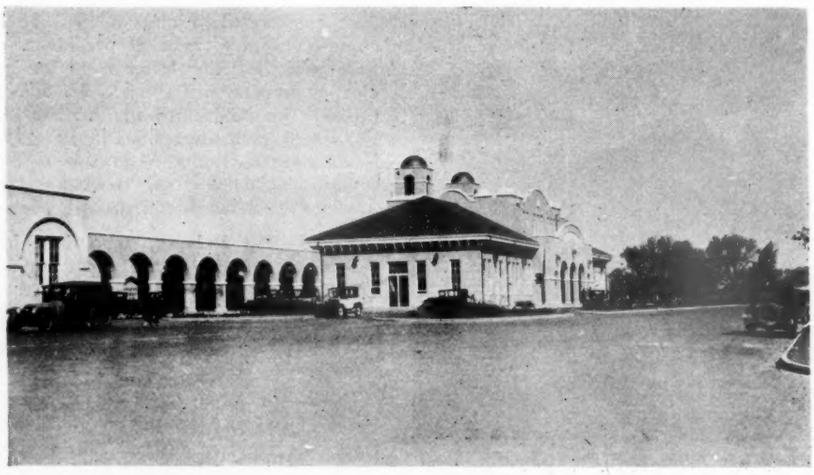
William W. Young, master mechanic on the Texas and Louisiana Lines of the Southern Pacific at Houston, Tex., died at a hospital in that city on September 5 at the age of 61 years.

L. M. Vance, assistant land and tax commissioner of the Missouri-Kansas-Texas lines, with headquarters at Dallas, Tex., died in that city on July 19. Mr. Vance had held that position for the last 20 years and previous to 1910 he had been for a short time purchasing agent of the Trinity & Brazos Valley (now the Burlington-Rock Island).

M. A. Hall, superintendent of machinery of the Kansas City Southern, with headquarters at Pittsburg, Kan., was killed on September 7 at Merwin, Mo., in an accident which took place while he was supervising wrecking operations at a passenger train derailment. Mr. Hall was killed when a crane by which he was standing overturned, pining him beneath it.

Elmer Richards, former division superintendent and superintendent of telegraph of the St. Louis Southwestern, and general manager of the Louisiana & Arkansas, died at Mount Pleasant, Tex., on September 6 at the age of 70 years. At the time of his retirement from railway service in 1926 Mr. Richards was superintendent of safety of the Cotton Belt.

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Atlantic Coast Line Photo

The Atlantic Coast Line's Station at Orlando, Fla.